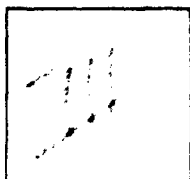
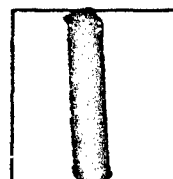


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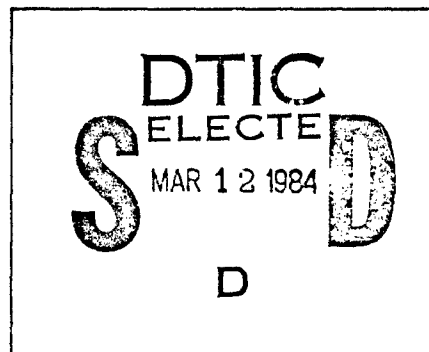
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1. REPORT NUMBER	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Develop a Biomedical Database on the Medical Aspects of Chemical Defense		5. TYPE OF REPORT & PERIOD COVERED Annual Vol. 2
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) Lawrence A. Landry		8. CONTRACT OR GRANT NUMBER(s) DAMD 17-80-C-0136
9. PERFORMING ORGANIZATION NAME AND ADDRESS Associate Consultants, Inc. 1701 K Street, N. W. Washington, D.C. 20006		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS 62734A.3M162734875.AD.373
11. CONTROLLING OFFICE NAME AND ADDRESS US Army Medical Research and Development Command Fort Detrick, Frederick, MD 21701 - ATTN: SGRD-RMS		12. REPORT DATE Oct. 1981
		13. NUMBER OF PAGES 144
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		15. SECURITY CLASS. (of this report) unclassified
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of "1a" Report) Approved for public release; distribution unlimited		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number)		
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## APPENDICES

- Appendix A. Guidelines for Abstractors
- B. Computerization Reports from Gill Associates, Inc
- C. Ten Sample Unit Records
- D. Print-Out of Sample Thesaurus

# CHEMICAL AGENT RETRIEVAL SYSTEM

A Comparative Analysis of Minicomputers and Large Scale Computers

*Report to:*

U.S. ARMY MEDICAL RESEARCH AND DEVELOPMENT COMMAND  
DEPARTMENT OF THE ARMY

*Prepared for:*

ASSOCIATE CONSULTANTS, INC.

GILL ASSOCIATES, INC.  
MANAGEMENT CONSULTANTS

April, 1981

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## I. INTRODUCTION

This report satisfies a special request made by USAMRDC personnel for a discussion paper on the advantages and disadvantages of minicomputers versus large-scale machines. The request was made, and subsequent analysis performed, in order to help determine the best computer architecture and philosophy to be used in Phase I and Phase II implementation of the chemical agent information retrieval system.

The document addresses some of the essential differences between large machines and minicomputers as they relate to the characteristics of the applications to which they are to be applied. With this information, USAMRDC personnel (responsible for establishing information systems and computer policy) will have both justification for the use of minis in particular situations and a framework for selecting the proper data processing environment, large machine or mini, for implementing the chemical data base.

The trend toward centralization of computing was set in motion in the early 1970's when analysts found that a few large computers could do the work of several small or medium ones for less money. A perennial lack of qualified computer specialists reinforced this significant cost benefit, and the emergence of data base technology that enabled report integration on its operation further fueled the flames of centralization.

More recently, however, evidence suggests that this path is not necessarily a good one. Service levels seems to be deteriorating: users complain that data centers are lethargic and nonresponsive, and



centralization of computer facilities all too often runs against the decentralized operations preferred by many organizations. In addition, there have been difficult administrative problems in forging formal coordination and control policy for the centralized computer organization. Some of these problems could be viewed as transitional; others are more fundamental. For example, in order for centralized computing to be effective, executive management must be willing to endorse and enforce standardized data processing project development.

As a consequence of these administrative and organizational difficulties, a burdening question confronts management: Are the measurable economic benefits of centralized computing worth the side effects? Developments in minicomputer technology have dramatically changed the economic and organizational variables. Today minicomputers are available for a fraction of the cost of large computers and can be operated with less specialized support than the large ones require. This not to imply that minis are going to replace large mainframes in the near future. The implication is, however, that technology has matured to the point where the costs of using a mini for certain data processing jobs compare favorably with using a portion of the capacity of a large machine.

In order to take advantage of minicomputer technology, management must first understand its status and its potential, since it is management that must provide the initiative, the support, and the guidance for its implementation. Three areas of concern are addressed in promoting this understanding:

- Examination and assessment of the capabilities of minis as opposed to those of more familiar medium and large computers,

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- Illustration of a range of options for effective use of the new technology, and
- Assimilation of mini technology into an organization outlining management action guidelines.

## II. EXAMINATION AND ASSESSMENT

A minicomputer cost approximately \$50,000 for a typical business application and can perform a amount of the work of computers costing \$2,000,000. In Table 1, the key architecture and design characteristics of large, medium, and small computers have been outlined alongwith and assesment of the managerial significance of these differences. Data provided in this table are based upon industry averages and a representative group of computers from each category.

Two general observations can be drawn from this exhibit. First, through the minicomputer is not as "powerful" as the large or medium computer, it is suprisingly close, given the substantial price differentials. One reason for this closeness is that it has been possible to utilize new hardware technology considerably earlier in minis than in large machines because there is a smaller investment in hardware and software design for a mini. Consequently, a vendor can produce and integrate a new mini into his line much more rapidly than a large computer.

Since an important characteristic of new technology in the computer area has been rapidly decreasing cost, the price for a given amount of power in minis has been lowered consistently and quite rapidly. For example, in 1965 it cost \$25,000 to purchase a machine with 4,096 16-bit words and a 2-microsecond cycle time. Because of advances made in microtechnology, by 1974 it cost only \$1,990 to purchase a machine with these capabilities.

The second general observation concerns software. Large machine software is more advanced, and thus applications with substantial multiprogramming or shared multipurpose data bases require a large or medium machine. However, minicomputer manufacturers have recognized that one of their next big markets is the end-user business application, and so over the past two years they have begun to make substantial investments in software developments. As a result, it is now possible to use minicomputers as easily as it is large machines for many business applications.

In fact, it seems that the industry is now moving into an evolutionary stage where what is needed is increased investment in people for application programs and software development - not breakthrough in technology. This will become clear as the services that minis can provide, and the steps management must consider in attempting to assimilate them into the organization, are discussed.

Table 1. Technical comparison of large, medium and minicomputers

KEY COMPUTER ARCHITECTURE CHARACTERISTICS	LARGE COMPUTER	MEDIUM COMPUTER	MINICOMPUTERS	EFFECT Minicomputer vs. medium and large computers	SIGNIFICANCE Minicomputer vs. medium and large computers
<b>HARDWARE</b>					
Word length	32 bits (a bit is equivalent to a binary digit)	32 bits	16 bits	Size of readily addressable program or data areas is restricted. Instruction repertoire is smaller.	Efficiently implemented higher level languages are hard to provide, thus only a few exist. Large applications execute less efficiently and are harder to program.
Maximum memory size	8,400,000 bytes (a byte consists of 8 bits which provides enough binary digits to represent one numeric or alphabetic character)	524,000 bytes	262,000 bytes	Multiprogramming (the ability to execute programs simultaneously) is restricted. Substantial manipulation of large arrays of data is restricted.	The multiprogramming limitation is not significant, since minis are relatively inexpensive and can thus be dedicated to one or a few applications.
Data capacity: Memory path (width of the link between the main memory and central processor)	64 bits	16 bits	16 bits	Execution is less efficient.	The data capacity architecture of the large computer makes it more effective for large data processing demands in a multipro-

Table 1. (cont'd)

KEY COMPUTER ARCHITECTURE CHARACTERISTICS	LARGE COMPUTER	MEDIUM COMPUTER	MINICOMPUTER	EFFECT Minicomputer vs. medium & large computers	SIGNIFICANCE Minicomputer vs. medium & large computers
Data Capacity (cont) Interleaving (ability to simultaneously access more than one part of main memory)	4-way (as many as 3 input/output (I/O) channels & the central processor can be simultaneously transferring data to and from main memory)	None	None	Overlap of program execution and I/O data transfer is restricted (compared)	programming environment.  The mini's power compares with the medium computer's in a dedicated data processing environment, insofar as data capacity is concerned.
Number of channels (channels operate the I/O devices)	Many	A few	One	Configuration and overlap of activity of I/O devices are restricted.	
I/O channel data (the rate that data can be transferred over all channels to main memory)	16,000,000 bytes/second	2,400,000 bytes/second	2,360,000 bytes/second	Simultaneous transfer of data from multiple I/O devices is restricted (compared with the large computer).	
Processor architecture: Central processor unit cycle time (how fast instructions can be carried out)	80 nanoseconds (1 nanosecond = 1 billionth of a second)	275 nanoseconds	300 nanoseconds	Instruction execution is slower compared with large computer.	The mini is restricted to applications requiring substantial processing activity; such activity is not

Table 1. (cont'd)

KEY COMPUTER ARCHITECTURE CHARACTERISTICS	LARGE COMPUTER	MEDIUM COMPUTER	MINICOMPUTERS	EFF. CT Minicomputer vs. medium and large computers	SIGNIFICANCE Minicomputer vs. medium and large computers
<b>HARDWARE (cont'd)</b>					
Memory cycle (how fast instructions or data can be retrieved from main memory; it should be considered together with the width of the memory path)	480 nanoseconds	800 nanoseconds	850 nanoseconds	Instruction and data transfer to memory is somewhat slower (compared with large computer).	typical of business applications.
Number of registers (an indication of more sophisticated programming)	Many	Many	Relatively few	System software development is limited.	
Number of basic instructions	Approximately 150	Approximately 140	Approximately 80	Execution is less efficient.	
<b>SOFTWARE</b>					
Operating systems: Batch (applications programs are submitted to computer in self-contained units with no strict timing requirements)	Multiprogramming (batch applications are run simultaneously)	Multiprogramming	Multiprogramming (2 programs only)	Computer system resources can be sufficiently utilized	Systems software for the large and medium computer is complex and designed for multiple tasks in order to share expensive resources; this is not

Table 1. (cont'd)

KEY COMPUTER ARCHITECTURE CHARACTERISTICS	LARGE COMPUTER	MEDIUM COMPUTER	MINICOMPUTERS	EFFECT	SIGNIFICANCE
SOFTWARE (cont'd)					
Real time (application programs are called into operation in response to request from I/O devices)	Separate telecommunications system added to other operating system	Same as for large computers	Telecommunications system is integrated with main operating system	Real time on a mini is usually dedicated to one application.	necessary for the mini since it is relatively inexpensive.
Time sharing	Supported simultaneously with other systems by addition of separate facilities	Same as for large computers	Computer must be dedicated to time sharing	Time sharing on a mini is usually dedicated to support of on-line terminals.	
Data base and file management systems	Many sophisticated systems are	Many systems are available	A few limited systems are available	Data-base systems must be largely developed in-house	Shared multipurpose data bases are hard to implement on a mini - a significant constraint if these are required.
Programming languages	All 8 major languages	All 8 major languages	Four major languages	COBOL is only gradually becoming available for some minis, which is a significant limitation for companies using COBOL as a standard language.	Language for some applications may not be perfectly appropriate, but this distinction is not critical since there are enough languages available for minis.



Table 1. (cont'd)

KEY COMPUTER ARCHITECTURE CHARACTERISTICS	LARGE COMPUTER	MEDIUM COMPUTER	MINICOMPUTERS	EFFECT Minicomputer vs. medium and large computers	SIGNIFICANCE Minicomputer vs. medium and large computers
SOFTWARE (cont'd)					
Program development aids (e.g., debugging aids, checkout compilers)	Many	Many	Limited	Programming efficiency is inhibited.	More highly skilled applications programmers are required.
Application packages (e.g., payroll, bill of materials, models)	Thousands	Thousands	Hundreds	Users must program more applications in-house.	More cost is involved in programming, if packages available for large or medium machines.
ADDITIONAL CONSIDERATIONS					
Reliability	High	High	Very high; time to fix is brief because of relative simplicity	The mini is likely to be more reliable, but the distinction is unlikely to be important for most applications.	Reliability and vendor support must be considered together.
Vendor support	Outstanding	Outstanding	Good	Caveat emptor applies to mini somewhat.	

Table 1. (cont'd)

KEY COMPUTER ARCHITECTURE CHARACTERISTICS	LARGE COMPUTER	MEDIUM COMPUTER	MINICOMPUTERS	EFFECT Minicomputer vs. medium and large computers	SIGNIFICANCE Minicomputer vs. medium and large computers
ADDITIONAL CONSIDERATION					
Purchase cost	Millions of dollars	Hundreds of thousands of dollars	Tens of thousands of dollars	Minis are substantially cheaper	Purchase and operational cost are the most significant advantages minis have over large and medium computers.
Operating requirements	Considerable amount of specially prepared space and air conditioning; operators and well-trained systems programmers required	Same as for large computers	One operator per shift, no special site preparation, good systems programmers required	Operational costs are much lower.	

Source: EDP Solutions (Datapro Research Corporation)

### III. RANGE OF OPTIONS

Options for using a mini range from enhancing the service level of the data center to replacing the center entirely. Thus the options can first be thought of as being arrayed along the links between the actual user and the central computer. Second, since minis are most often devoted to just one application and are typically located near the user, this same arraying of options can also be thought of as ranging from centralized to decentralized control of the organization's EDP resources.

The relationship between these two concepts is shown in Figure 1. For discussion purposes, four basic options, ranging from using no minis to using only minis have been listed. Of course, an organization can use minis in more than one way, since these options are not mutually exclusive.

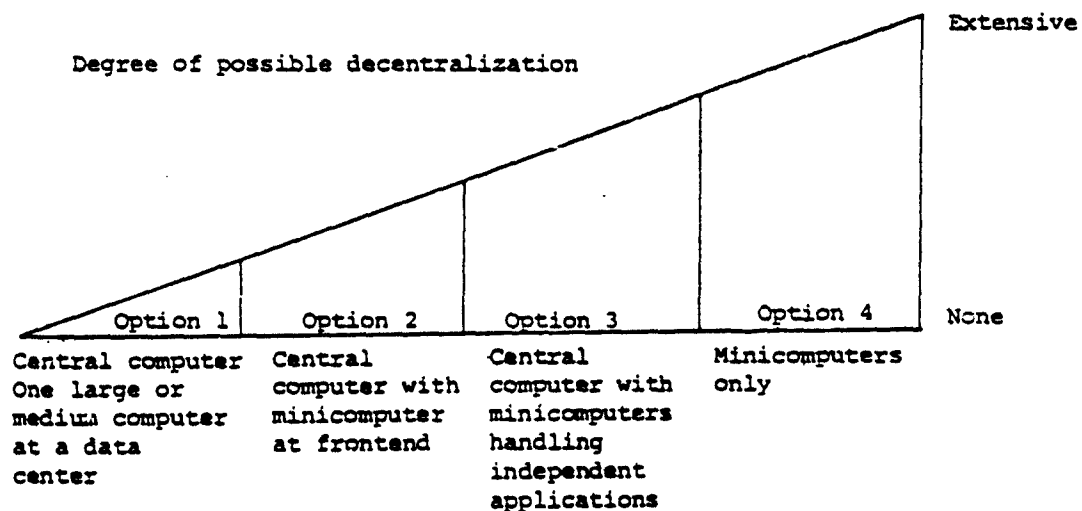


Figure 1. Computer configurations and relative degree of decentralized computing

Source: EDP Solutions (Datapro Corporation)

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- Option 1 represents companies that do not use minis at all. An important issue to be raised is operational effectiveness of using one large computer for all applications. In making the decision, a company should place considerable weight on the value of separate operations for on-line and batch applications—particularly in a system that does not already have on-line applications.
- Option 2 covers not only companies that use minis as front-ends, that is, minis that handle communications between terminals and central computers, but those using other combinations of minis and large machines in computing networks as well. The idea is to use mini as the front-end of the central computer, where it can handle communications with terminals and do additional processing otherwise done on the central computer. The minicomputer could thus lower the computing load on the main machine, thereby making it available for more complex processing for which it is better suited.
- Option 3 applies to those organization in which minis handle independent applications and require no active link to the central computer. In this case, however, the mini and large machines may interchange data on a periodic basis, for instance, nightly. A distinct advantage of this option is that the performance level of mainframe suffers no deterioration as new and independent applications are added to the system. These applications can be readily absorbed by the minis.
- Option 4 represents companies using only minis. It includes those with departmental minicomputers that are tied together in networks with telephone lines to permit sharing of data and programs. This lends itself to organizations fostering a decentralized operating philosophy. The desirability of user control is promoted with this arrangement. Where applicable, some central coordination of computing may result in a degree of standardization of computer operation or software and may contribute to organizational effectiveness.

#### IV. ASSIMILATION OF MINICOMPUTER TECHNOLOGY

The use of minis is not necessarily an either/or proposition. Instead, management needs to determine how minis can most effectively be integrated into the overall data processing system of an organization. This determination is best made by first carrying out a high-level design for the application. Table 1 provides such a design framework to use in examining the characteristics of a mini that limit its power with respect to a large or medium machine. In particular, the primary limitations occur when the application requires either a substantial amount of processing or the establishment of a complex data base common to multiple applications.

After this analysis is completed and has shown a minicomputer to be feasible, the decision to use a mini, medium, or large computer requires a qualitative weighing of three factors:

- A. Economics
- B. User Control
- C. Operation Effectiveness

##### A. Economics

Cost is perhaps the most compelling justification for using or not using a mini. There are three components of cost: software development, hardware, and operations. Software development costs for large machines and minis will generally be comparable, but the numerous commercial software packages available for large computers will often justify using a large computer for an application. In analyzing the hardware and operating costs for the large machine, the command must decide whether full costing would charge the application for all resources that it uses directly plus a proportionate share of all other resources in the system that are shared,

such as people and space. Direct costing charges the new application only for the required incremental resources, such as direct use of the central processing unit and peripheral equipment. If existing computer facilities are idle because of underutilization of large machine, arguments can be made for incremental costing of a new application.

Although it may be desirable to use direct costing in some situations, it is important to recognize that there will be pressure from full-cost users to relegate direct-cost users to lower-priority computer time and to suspend them during periods of high load on the large machine. In addition, as the computer needs of a command grow, it may require a larger machine. The direct-cost user will have contributed to making the load heavy enough to justify a new machine and may then have to be charged full instead of direct costs. Thus using direct costing has some pitfalls and must be viewed cautiously.

#### B. USER CONTROL

The mini allows the user to be independent of other programs on the main computer. In addition, the user of the mini is free from concern about the computer center's need to keep its machine operational and upgrade its capabilities to meet increasing loads. These issues may arise when some users of the large machine have a heavy, high priority load that interferes with the needs of other users. This situation is particularly frustrating when one division is particularly frustrating when one division controls the central computer. (This same problem occurs for small or medium-sized organizations that utilize a service bureau.) The user with his own mini will not suffer from interruptions of this type. Independence is also particularly useful for a user when there are response time constraints, since response will be fully under the user's control.

### C. OPERATIONAL EFFECTIVENESS

For substantially decentralized operations, today's economical mini may be more practical and far less disruptive than larger machines for in-house data processing. The mini can help relieve the complexity of the operational load on the central computer. With this simpler environment (particularly with on-line systems), the data processing center will require less systems programming talent, which may be shifted to serve users' needs directly.

## V. GUIDELINES

Minicomputer technology has now matured to the stage where management can harness its economic and organization potential. Management's responsibility is to develop an understanding of the appropriate way to integrate minicomputers into the organization. Each should carefully assess its data processing system in terms of where it is going and how, and it should inspect the opportunities for taking advantage of minicomputers.

The data processing staff should build a good understanding of the use and programming of minis. Over a three-year horizon this understanding should evolve so that all computer designers and programmers are equally comfortable using large or small machines. Thus for the long run it is inappropriate to separate the computer staff into minicomputer and large machine programmers. However, in order to get this learning started, it will be necessary to build an understanding of minis in the computer staff, and such a separation may initially be necessary.

To provide leadership to engender an appropriate environment and policy superstructure for incorporating minicomputer technology, top management should take the following actions:

- Direct the EDP manager to acquire and build minicomputer technology capability by integrating technical systems and applications expertise into the current staff.
- Establish a policy to include minicomputer options among alternatives for all new major applications.
- Look for an opportunity to use a mini for the computing needs of a small, independent division, for instance, one that refuses to participate in the central computer utility.



This could also be an opportunity for the entire command to gain valuable experience.

- Establish a central function to study and promulgate mini-computer standards for hardware, software, applications development, and data bases. This is a very important function to keep under control when computer systems are being decentralized.

## VI. SUMMARY

Although the cost of mini computers itself is low, the total computing facility is not only the CPU. The peripheral devices for the mini computers are still costly. Also, the cost of software supplied by the manufacturer and that to be developed by the user has to be considered. Hence, when the cost comparison between a minicomputer and mainframe alternative is to be done, the comparison must include the total cost. The comparison should include not only the dollar figure, but non-tangibles such as dependability and "after-sales" customer service from the supplier as well. In general, customer service has been better from manufacturers of mainframes.

In conclusion the decision to use minicomputers, or mainframes or a combination of these will depend on the particular application under consideration. Certain applications will be definitely suited for minicomputers; while for others, mainframes will be the certain solution.

In light of the chemical information retrieval system the volume of data anticipated for Phase II implementation essentially dictates the use of a large machine because of the current storage limitations of peripherals (specially disk units) associated with minicomputers. In addition large machines would better allow for system expandability. In the more likely event that new or related applications are desired, these machines could accommodate future enhancements with less regard to technical questions of space and specific programmer talent. There will be many problems or applications where whether to use mini, mainframe, or a combination of these may not be so obvious. In such situations, a thorough study of present requirements and future

requirements along with what is available and what is going to be available should be made before making the final choice.

Chemical Agent Retrieval System  
Procedures for Completing the Unit Record Coding Form

FIELD NAME

PROCEDURE

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Circle the code designating the status of the form to be processed as follows:

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1. Circle Action Code 1
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3. Fill in all applicable data fields

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1. Circle Action Code 2
2. Enter Accession Number
3. Complete only the field to be changed

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1. Circle Action Code 3
2. Enter Accession Number

Accession Number

Enter the unique identifying number assigned to each unit record.

Distribution Status

Enter the code designation for the distribution of the report.

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Review

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Page Range

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Number of References

Count the number of references in the bibliography. Enter the number in the field.

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Enter the unique report number(s) assigned to the document. A maximum of four (4) numbers can be coded.

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PROCEDURE

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articles.

Abstract/Digest

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4,500 characters are allowed.



TABLE 1

## LISTING OF COUNTRY CODES

AC	ANTIGUA	GR	GREECE
AF	AFGHANISTAN	GT	GUATEMALA
AG	ALGERIA	GY	GUINEA
AL	ALBANIA	GY	GUYANA
AN	ANDORRA	GZ	GAZA STRIP
AO	ANGOLA	HA	HAITI
AQ	AMERICAN SAMOA	HK	HONG KONG
AR	ARGENTINA	HM	HEARD ISLAND AND MCDONALD ISLANDS
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AT	ASHMORE AND CARTIER ISLANDS	HU	HUNGARY
AU	AUSTRIA	IC	ICELAND
AV	ANGUILLA	ID	INDONESIA
AY	ANTARCTICA	IM	MAN. ISLE OF
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BB	BARBADOS	IO	BRITISH INDIAN OCEAN TERRITORY
BC	BOTSWANA	IQ	U.S. MISCELLANEOUS PACIFIC ISLANDS
BD	BERMUDA	IR	IRAN
BE	BELGIUM	IS	ISRAEL
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BG	BANGLADESH	IV	IVORY COAST
BH	BELIZE	IY	IRAQ-SAUDI ARABIA NEUTRAL ZONE
BI	BOLIVIA	IZ	IRAQ
BM	BURMA	JA	JAPAN
BN	SOLOMON ISLANDS	JE	JERSEY
BO	NAVASSA ISLAND	JM	JAMAICA
BR	BRAZIL	JN	JAN MAYEN
BT	BHUTAN	JO	JORDAN
BV	BULGARIA	JQ	JOHNSTON ATOLL
BW	BOUVET ISLAND	KE	KENYA
BX	BRUNEI	KN	KOREA, DEMOCRATIC PEOPLE'S REPUBLIC OF
BY	BURUNDI	KR	KIRIBATI
BZ	GERMANY, BERLIN	KS	KOREA, Republic of
CA	CANADA	KT	CHRISTMAS ISLAND
CC	KAMPUCHEA	KU	KUWAIT
CD	CHAD	LA	LAOS
CE	SRI LANKA	LE	LEBANON
CG	CONGO	LI	LIBERIA
CH	ZAIRE	LS	LIECHTENSTEIN
CI	CHINA	LT	LESOTHO
CK	CHILE	LU	LUXEMBOURG
CL	CAYMAN ISLANDS	LY	LIBYA
CM	COCOS (KEELING) ISLANDS	MA	MADAGASCAR
CN	CAMEROON	MC	MARTINIQUE
CO	COMOROS	MD	MACAU
CR	COLOMBIA	MG	MONGOLIA
CS	NORTHERN MARIANA ISLANDS	MH	MONTserrat
CT	CORAL SEA ISLANDS	MI	MALAWI
CU	COSTA RICA	ML	MALI
CV	CENTRAL AFRICAN REPUBLIC	MN	MONACO
CX	CUBA	MO	MOROCCO
CY	CAPE VERDE	MP	MAURITIUS
CZ	COOK ISLANDS	MQ	MIDWAY ISLANDS
DA	CYPRUS	MR	MAURITANIA
DB	CZECHOSLOVAKIA	MT	MALTA
DC	DENMARK	MU	OMAN
DD	DJIBOUTI	MV	MALDIVES
DE	DEMIN	MX	MEXICO
DF	DOMINICA	MY	MALAYSIA
DG	DOMINICAN REPUBLIC	NZ	MOZAMBIQUE
DH	ECUADOR	NA	NETHERLANDS ANTILLES
DI	EGYPT	NC	NEW CALEDONIA
DJ	IRELAND	NE	NIUE
DK	EQUATORIAL GUINEA	NF	NORFOLK ISLAND
DL	EL SALVADOR	NG	NIGER
DM	ETHIOPIA	NH	NAURU
DN	FALKLAND ISLANDS	NI	NIGERIA
DO	FRENCH GUIANA	NL	NETHERLANDS
DP	FINLAND	NO	NORWAY
DQ	FIJI	NP	NEPAL
DR	FAROE ISLANDS	NQ	TRUST TERRITORY OF THE PACIFIC ISLANDS
DS	FRENCH POLYNESIA	NR	NAURU
DT	FRANCE	NS	SURINAME
DU	FRENCH SOUTHERN AND ANTARCTIC LANDS	NU	NICARAGUA
DV	GAMBIA, THE	NZ	NEW ZEALAND
DW	GABON	PA	PARAGUAY
DX	GERMAN DEMOCRATIC REPUBLIC	PC	PITCAIRN ISLANDS
DY	GERMANY, FEDERAL REPUBLIC OF	PE	PERU
DZ	GHANA	PF	PARACEL ISLANDS
EA	GIBRALTAR	PG	SPRATLY ISLANDS
EB	GRENADA	PK	PAKISTAN
EC	GREENLAND	PL	POLAND
ED	GUERNSEY	PM	PANAMA
EE	GUADELOUPE	PO	PORTUGAL
EF	GUAM		

LISTING OF COUNTRY CODES - Page 2

PP	PAPUA NEW GUINEA
PQ	GUINEA-BISSAU
QA	QATAR
RE	REUNION
RO	ROMANIA
RP	PHILIPPINES
RQ	PUERTO RICO
RT	RWANDA
SA	SAUDI ARABIA
SB	ST. PIERRE and MIQUELON
SC	SAINT CHRISTOPHER-NEVIS-ANGUILLA
SE	SEYCHELLES
SP	SOUTH AFRICA
SG	SENEGAL
SH	ST. HELENA
SI	SIERRA LEONE
SM	SAN MARINO
SN	SINGAPORE
SO	SOMALIA
SP	SPAIN
ST	ST. LUCIA
SD	SUDAN
SV	SVALBARD
SW	SWEDEN
SY	SYRIA
SZ	SWITZERLAND
TC	UNITED ARAB EMIRATES
TD	TRINIDAD and TOBAGO
TH	THAILAND
TK	TURKS and CAICOS ISLANDS
TM	TONGA
TO	TOGO
TP	SAO TOME and PRINCIPE
TS	TUNISIA
TR	TURKEY
TV	TUVALU
TF	TAIWAN
TE	TANZANIA, UNITED REPUBLIC OF
UG	UGANDA
UK	UNITED KINGDOM
UR	UNION OF SOVIET SOCIALIST REPUBLICS
US	UNITED STATES
UV	UPPER VOLTA
UY	URUGUAY
VC	ST. VINCENT and the GRENADINES
VE	VENEZUELA
VI	BRITISH VIRGIN ISLANDS
VN	VIETNAM
VQ	VIRGIN ISLANDS
VT	VATICAN CITY
WA	NAMIBIA
WP	WALLIS AND FUTUNA
WQ	WAKE ISLAND
WZ	SWAZILAND
YE	YEMEN (SANA)
YO	YUGOSLAVIA
YS	YEMEN (ADEN)
ZA	ZAMBIA
ZI	ZIMBABWE

TABLE 2

LANGUAGE CODE TABLE - Partial Listing

ENGLISH	ENG
FRENCH	FRE
GERMAN	GER
ITALIAN	ITA
LATIN	LAT
POLISH	POL
RUSSIAN	RUS
SPANISH	SPA

NOTE: Code consists of first three letters of the name of the language of the article being abstracted.



Appendix C

Ten Sample Unit Records

ITEM 109

ACCESSION NUMBER	:00000229
DISTRIBUTION STATUS	:UL
SECURITY CLASS	:U
COUNTRY CODE	:US
NO. OF FICHE	:0
LANGUAGE CODE	:ENG
DOCUMENT TYPE	:J
NO. OF PAGES	:7
PUBLICATION YEAR	:1966
VOLUME NUMBER	:8
NO. OF GRAPHICS	:4
FICHE LOCATOR	:0
PAGE RANGE	:533-539
NO. OF REFERENCES	:9
AUTHORS	:
LOOMIS TED A	
JOHNSON DENNIS D	
CAS REGISTRY NUMBERS	:
96-64-0	
67-68-5	
76-03-9	
50-06-6	
55-48-1	
51-84-3	
INDEX TERMS	:
AGING	
SOMAN	
NEUROMUSCULAR FUNCTION	
OXIMES	
DIMETHYL SULFOXIDE	
PHOSPHONYLATION	
ACETYLCHOLINESTERASE	
RATS (SPRAGUE-DAWLEY)	
PENTOBARBITAL	
ANTERIOR TIBIAL MUSCLE	
SCIATIC NERVE	
ISOTONIC CONTRACTIONS	
STIMULATION	
ATROPINE SULFATE	
NUCLEOPHILIC OXIMES	
REACTIVATION	
SOMAN-INHIBITED ACHE	
TMB-4	
TCIA	
PI50	

ENZYMES

TEMPERATURE

DMSO

POTENTIATED TWITCH RESPONSE

TETANIC RESPONSE BLOCKADE

ACETYLCHOLINE

TWITCH RESPONSE

TETANIC RESPONSE

CHOLINESTERASE

N-METHYLPYRIDINE 2-ALDOXIME TRICHLOROACETATE

AFFILIATION :

DEPARTMENT OF PHARMACOLOGY, SCHOOL OF MEDICINE, UNIVERSITY OF  
WASHINGTON, SEATTLE, WASHINGTON 98105

SOURCE TITLE : TOXICOLOGY AND APPLIED PHARMACOLOGY

PERFORMING ORGANIZATION :

DEPARTMENT OF PHARMACOLOGY, SCHOOL OF MEDICINE, UNIVERSITY OF  
WASHINGTON, SEATTLE, WASHINGTON 98105

SPONSORING ORGANIZATION :

DEPARTMENT OF PHARMACOLOGY, SCHOOL OF MEDICINE, UNIVERSITY OF  
WASHINGTON, SEATTLE, WASHINGTON 98105

TITLE (DOCUMENT) :

AGING AND REVERSAL OF SOMAN-INDUCED EFFECTS ON NEUROMUSCULAR  
FUNCTION WITH OXIMES IN THE PRESENCE OF DIMETHYL SULFOXIDE

ABSTRACT/DIGEST :

THE CURRENT SERIES OF EXPERIMENTS STUDIED THE ROLE OF THE AGING  
PROCESS IN THE FAILURE OF OXIMES TO INDUCE RECOVERY OF  
SOMAN-INHIBITED NEUROMUSCULAR FUNCTION, AND TO REACTIVATE THE  
SOMAN-INDUCED PHOSPHONYLATED ACETYLCHOLINESTERASE. STUDIES WERE  
CONDUCTED ON 300-500 G SPRAGUE-DAWLEY RATS ANESTHETIZED WITH  
30 MG/KG PENTOBARBITAL, I.P. THE ANTERIOR TIBIAL BRANCH OF THE  
LEFT SCIATIC NERVE WAS ARRANGED FOR STIMULATION AND FOR RECORDING  
OF ISOTONIC CONTRACTIONS OF THE CORRESPONDING ANTERIOR TIBIAL  
MUSCLE AS OBTAINED FROM A LINEAR TRANSFORMER. STIMULUS VOLTAGE  
WAS ALWAYS SUPRAMAXIMAL (0.6 V, 4-MSEC DURATION). EACH ANIMAL  
WAS PRETREATED WITH 1 MG/KG ATROPINE SULFATE I.V. TWO NUCLEOPHILIC  
OXIMES WERE USED FOR REACTIVATION OF SOMAN-INHIBITED AChE:  
1,1'-TRIMETHYLENEBIS (4-FORMYLPYRIDINIUM) DIOXIME DICHLORIDE  
(TMB-4) AND N-METHYLPYRIDINE 2-ALDOXIME TRICHLOROACETATE (TCLA). THE  
SOMAN PREPARATION HAD A  $PI_{50}$  OF 10.2, AND WHEN ADDED TO THE ENZYME  
IN THE PRESENCE OF THE BUFFER AND ALLOWED TO STAND AT ROOM  
TEMPERATURE FOR 1, 5, 10, AND 15 MIN, APPROXIMATELY 50% INHIBITION  
OF THE ENZYME OCCURRED. HOWEVER, WHEN TCLA WAS ADDED IN  
FINAL CONCENTRATION OF  $1.7 \times 10^{-5}$  M AT 2, 5, OR 10 MIN  
AFTER INCUBATION OF THE SOMAN-ENZYME MIXTURE AT ROOM TEMPERATURE,  
APPROXIMATELY 50% OF THE SOMAN-INHIBITED ENZYME WAS REACTIVATED

IF THE TCLA WAS ADDED IMMEDIATELY OR WITHIN 2 MIN AFTER ADDITION OF THE SOMAN INHIBITION. THE DOSE OF SOMAN, WHICH PRODUCED 90% ( $2.7 \times 10^{(EXP-8)}$  M), DID NOT REACTIVATE ENZYME. TWELVE ANIMALS EACH RECEIVED 0.09 MG/KG SOMAN, I.V., AND GROUPS OF THREE WERE GIVEN 10 MG/KG TMB-4 PLUS 0.5 ML/KG DMSO I.V., AT EACH OF FOUR DIFFERENT TIME INTERVALS (1.5, 5, 10, or 15 MIN) FOLLOWING SOMAN. WHEN TMB-4-DMSO WAS ADMINISTERED AT 1.5-5 MIN AFTER SOMAN, COMPLETE RECOVERY OF NEUROMUSCULAR FUNCTION OCCURRED. ADMINISTRATION 10 MIN AFTER SOMAN RESULTED IN PARTIAL RECOVERY, 15 MIN FOLLOWING SOMAN THE MIXTURE PRODUCED BLOCKADE OF THE POTENTIATED TWITCH RESPONSE, BUT NO RECOVERY OF TETANIC RESPONSE. DMSO ALONE HAD ONLY MINOR NEUROMUSCULAR EFFECTS. CONTROL DOSES OF ACETYLCHOLINE (ACH), 0.1 UG/KG, I.V., PRODUCED NO EFFECT ON THE TWITCH RESPONSE, WHEN A 0.06-0.09 MG/KG, I.V. DOSE OF SOMAN WAS ADMINISTERED, BLOCKADE OF TETANIC RESPONSE WAS EVIDENT, BUT 10 MG/KG I.V. TMB-4 PLUS 0.5 ML/KG DMSO INDUCED RECOVERY. THE CONTROL DOSE OF ACH WAS WITHOUT EFFECT, INDICATING REACTIVATION OF A CHOLINESTERASE MECHANISM. AFTER 60 MIN, INJECTION OF ACH RESULTED IN A PROLONGED EFFECT MANIFESTED AS IMPAIRMENT OF THE TWITCH. THE REACTIVATION OF ACH BY TMB-4-DMSO IS TEMPORARY AND MAY INVOLVE ENHANCEMENT OF TRANSFER OF THE OXIME BY DMSO TO THE SITE OF THE SOMAN-INHIBITED ENZYME.

BASIS KEY :109  
RECORD SECURITY :0

ITEM 28

ACCESSION NUMBER :00000343  
DISTRIBUTION STATUS :UL  
SECURITY CLASS :U  
COUNTRY CODE :US  
NO. OF FICHE :0  
LANGUAGE CODE :ENG  
DOCUMENT TYPE :R  
NO. OF PAGES :12  
PUBLICATION YEAR :1972  
NO. OF GRAPHICS :1  
FICHE LOCATOR :0  
PROJECT NUMBER :1W652710AD2502  
NO. OF REFERENCES :19  
REPORT NUMBERS :  
AD741015  
EASP 1100-6  
AUTHORS :  
THOMAS NORMAN C  
FLEISHER JOSEPH H  
HARRIS LARREL W  
CAS REGISTRY NUMBERS :  
96-64-0  
306-44-5  
55-92-5  
51-84-3  
7558-80-7  
76-03-9  
INDEX TERMS :  
PINACOLYL METHYLPHOSPHONATE  
SOMAN-PHOSPHONYLATED ACETYLCHOLINESTERASE  
RADIOACTIVITY  
PHOSPHORUS  
ORGANOPHOSPHATE INTOXICATION  
INTOXICATION  
ACETYLCHOLINESTERASE  
SOMAN  
METHYLPHOSPHONATE  
TISSUE  
DOGS  
BRAIN  
CAUDATE NUCLEUS  
THALAMUS  
MEDULLA  
HIPPOCAMPUS



CEREBRAL CORTEX  
CEREBELLAR CORTEX  
REACTIVITY  
AGING  
MINA  
DOZERYTHROCYTE ACHE  
DEALKYLATION  
ACETYL-BETA-METHYLCHOLINE  
DOG BRAIN HOMOGENATES  
ACETYLCHOLINE  
SODIUM PHOSPHATE  
ACETYLCHOLINE IODIDE  
INHIBITION  
RADIOPHOSPHORUS  
BRAIN HOMOGENATES  
ALIQOTS  
TRICHLOROACETIC ACID  
BOVINE ALBUMIN  
METHYL 32-P PHOSPHONATE  
PINACOLYL METHYL 32-P PHOSPHONATE  
PHOSPHONYLATED  
AFFILIATION :  
DEPARTMENT OF THE ARMY, EDGEWOOD ARSENAL, BIOMEDICAL LABORATORY,  
EDGEWOOD ARSENAL, MD 21010  
PERFORMING ORGANIZATION :  
DEPARTMENT OF THE ARMY, EDGEWOOD ARSENAL, BIOMEDICAL LABORATORY,  
EDGEWOOD ARSENAL, MD 21010  
SPONSORING ORGANIZATION :  
DEPARTMENT OF THE ARMY, EDGEWOOD ARSENAL, BIOMEDICAL LABORATORY,  
EDGEWOOD ARSENAL, MD 21010  
TITLE (DOCUMENT) :  
UTILIZATION OF [(EXP32)P] SOMAN FOR MEASUREMENT OF ACETYLCHOLINES-  
TERASE IN BRAIN TISSUES  
COMMENT :SEE ALSO ACC # 0342  
ABSTRACT/DIGEST :  
DTIC VERIFIED FACSIMILE OF:THOMAS, N. C., FLEISHER, J. H., AND  
HARRIS, L. W., UTILIZATION OF [(EXP32)P] SOMAN FOR MEASUREMENT  
OF ACETYLCHOLINESTERASE IN BRAIN TISSUES. BIOCHEM BIOPHYS.  
ACTA, 235:542-547, 1971. DTIC DATE: 1972.  
BASIS KEY :28  
RECORD SECURITY :0

ITEM 66

ACCESSION NUMBER	:00000062
DISTRIBUTION STATUS	:UL
SECURITY CLASS	:U
COUNTRY CODE	:NL
NO. OF FICHE	:0
LANGUAGE CODE	:ENG
DOCUMENT TYPE	:J
NO. OF PAGES	:11
PUBLICATION YEAR	:1957
VOLUME NUMBER	:26
NO. OF GRAPHICS	:10
FICHE LOCATOR	:0
PAGE RANGE	:29-39
NO. OF REFERENCES	:20
AUTHORS	:
COHEN J A	
WARRINGA M G P J	
CAS REGISTRY NUMBERS	:
77-81-6	
107-44-6	
96-64-0	
55-91-4	
7439-96-5	
INDEX TERMS	:
TABUN	
SARIN	
SOMAN	
DFP	
HOG	
KIDNEY	
DFP-ASE	
ETHYLMETHANEFLUOROPHOSPHONATE	
PROPYL-1-2-ETHANEFLUOROPHOSPHONATE	
(2-2-DIMETHYL PROPYL)-1-METHANEFLUOROPHOSPHONATE	
NERVE GAS	
ANTICHOLINESTERASE POISONING	
RATS	
MANGANESE	
PROTEINS	
METAL IONS	
COFACTORS	
FLUOROPHOSPHORIC ACIDS	
CYCLOHEXYL METHANEFLUOROPHOSPHONATE	

1

PROPYL-1-METHANEFLUOROPHOSPHONATE  
(2-2-DIMETHYLPROPYL)-1-METHANEFLUOROPHOSPHONATE  
PROPYL-2 ETHANEFLUOROPHOSPHONATE  
PROPYL-1-2-ISOPROPANE FLUOROPHOSPHONATE  
PROPYL-1-2-CYCLOHEXANE FLUOROPHOSPHONATE  
HYDROLYSIS  
INHIBITION OF HYDROLYSIS  
ELECTROPHORETIC PRODUCT  
CHOLINE ESTERS  
AFFILIATION :  
MEDICAL BIOLOGICAL LABORATORY OF THE NATIONAL DEFENCE RESEARCH  
COUNCIL T.N.O., RIJSWIJK, Z.H. (THE NETHERLANDS)  
SOURCE TITLE :BIOCHIM. BIOPHYS. ACTA  
PERFORMING ORGANIZATION :  
MEDICAL BIOLOGICAL LABORATORY OF THE NATIONAL DEFENCE RESEARCH  
COUNCIL T.N.O., RIJSWIJK, Z.H. (THE NETHERLANDS)  
SPONSORING ORGANIZATION :  
MEDICAL BIOLOGICAL LABORATORY OF THE NATIONAL DEFENCE RESEARCH  
COUNCIL T.N.O., RIJSWIJK, Z.H. (THE NETHERLANDS)  
TITLE (DOCUMENT) :  
PURIFICATION AND PROPERTIES OF DIALKYLFLUOROPHOSPHATASE  
ABSTRACT/DIGEST :  
INTEREST IN NERVE GASES (TABUN, SARIN AND SOMAN) AND RELATED  
COMPOUNDS LIKE DIISOPROPYLPHOSPHOROFUORIDATE (DFP), TOGETHER  
WITH GROWING THERAPEUTIC, DIAGNOSTIC, AND AGRICULTURAL USES OF  
SIMILAR CHEMICALS AS INSECTICIDES, HAS FOCUSED ATTENTION ON  
METABOLISM IN MAN. BASED UPON FRACTIONATION OF HOG KIDNEY  
EXTRACTS WITH ALCOHOL, A DFP-ASE ENZYME PREPARATION B(SUB1)  
WAS FOUND TO BE 100-150 TIMES MORE PURE THAN THE ORIGINAL KIDNEY  
HOMOGENATE AND 2-5 TIMES MORE PURE THAN FRACTION A. FLUOROPHOS-  
PHATASE (DFP-ASE) ACTIVITY WAS ASSESSED BY THE WARBURG METHOD:  
ACTIVATION OF DFP-ASE. MANGANESE CHLORIDE PRODUCED MARKED  
ACTIVATION. INHIBITION OF DFP-ASE. P-CHLOROMECURIBENZOIC ACID  
(PCP) IN A CONCENTRATION OF  $1.66 \times 10^{-5}$  (EXP-5) PRODUCED 50% INHI-  
BITION ON INCUBATION AT 37 DEGREES C FOR 15 MIN. INHIBITION  
WAS REVERSED BY INCUBATING THE ENZYME WITH  $10^{-3}$  M CYSTEINE.  
SPECIFICITY OF DFP-ASE WAS INVESTIGATED FOR A LARGE NUMBER OF  
COMPOUNDS: (1) ETHYLMETHANEFLUOROPHOSPHONATE, (2) PROPYL-1-  
METHANEFLUOROPHOSPHONATE, (3) SARIN, (4) (2-2-DIMETHYLPROPYL)-1-  
METHANEFLUOROPHOSPHONATE, (5) SOMAN, (6) CYCLOHEXYL METHANE-  
FLUOROPHOSPHONATE, (7) PROPYL-2-ETHANEFLUOROPHONATE, (8) PROPYL-  
2-ISOPROPANE FLUOROPHOSPHONATE, AND (10) TABUN. HYDROLYSIS WAS  
STRONGLY ACTIVATED BY TABUN AND DFP, BUT NOT BY COMPOUNDS 1-9  
EXCEPT COMPOUND 2. FOR ALL OTHER COMPOUNDS, MANGANESE CAUSED  
INHIBITION OF HYDROLYSIS. ACTIVATION WAS OBSERVED IN ALL COMPOUNDS  
EXCEPT SOMAN COMPOUNDS 6 AND 9 WHEN MANGANESE AND FRACTION G (AN

ELECTROPHORETIC PRODUCT WITH DFP-ASE ACTIVITY) WERE ADDED. CHOLINE ESTERS IN HIGH CONCENTRATION CAUSED INHIBITION OF DFP HYDROLYSIS BY DFP-ASE. HOMOGENEITY OF DFP-ASE IN B PREPARATIONS. IN B PREPARATIONS, ONE AND THE SAME ENZYME IS PROBABLY RESPONSIBLE FOR THE HYDROLYSIS OF THE ESTERS OF FLUOROPHOSPHONIC AND FLUOROPHOSPHORIC ACIDS. IT IS UNCERTAIN WHETHER THE SAME ENZYME IS RESPONSIBLE FOR TABUN HYDROLYSIS. EXPERIMENTAL TREATMENT OF ANTI-CHE POISONING CONDITIONS ONLY ALLOWS CONCLUSIONS PERTAINING TO PROPYLAXIS AND NOT THERAPY. ONLY A PREPARATIONS HAVE BEEN USED. FEMALE RATS (110-160(SUBG)) RECEIVED 1 ML, I.V., DFP-ASE FOLLOWED 1-3 MIN BY LETHAL S.C. DOSE OF 4 MG/KG DFP OR 400-500 UG/KG SARIN. OF 23 TREATED ANIMALS, 18 SURVIVED. ALL 16 UNTREATED CONTROLS DIED. TREATMENT SAVED 16 OF 38 SARIN-POISONED RATS, AND KILLED 17 OUT OF 18 CONTROLS. MANGANESE HAD NO EFFECT ON SURVIVAL. IT WAS CONCLUDED THAT THE ACTIVITY CRUDE HOMOGENATES OF DFP-ASE CANNOT BE PROPERLY ASSESSED BECAUSE OF THE MULTIPLE ENZYMES OF RELATED SPECIFICITY, OTHER PROTEINS, METAL IONS, COFACTORS, AND INHIBITORS.

BASIS KEY :66  
RECORD SECURITY :0

ITEM 120

ACCESSION NUMBER :00000291  
DISTRIBUTION STATUS :UL  
SECURITY CLASS :U  
COUNTRY CODE :NL  
NO. OF FICHE :0  
LANGUAGE CODE :ENG  
DOCUMENT TYPE :J  
NO. OF PAGES :4  
PUBLICATION YEAR :1966  
VOLUME NUMBER :2  
NO. OF GRAPHICS :2  
FICHE LOCATOR :0  
PAGE RANGE :989-992  
NO. OF REFERENCES :9  
AUTHORS :  
POLAK R L  
MEEKS MARIA M  
CAS REGISTRY NUMBERS :  
51-84-3  
51-55-8  
96-64-0  
7782-44-7  
124-38-9  
55-48-1  
7447-40-7  
64-47-1  
INDEX TERMS :  
BRAIN TISSUE  
ANTICHOLINESTERASE  
ACETYLCHOLINE  
ATROPINE  
RAT BRAIN  
CORTICAL SLICES  
SOMAN  
KREBS SOLUTION  
OXYGEN  
CARBON DIOXIDE  
DORSAL LEECH MUSCLE  
INCUBATION  
ATROPINE SULFATE  
POTASSIUM CHLORIDE  
ESERINE SULFATE  
AFFILIATION :  
MEDICAL BIOLOGICAL LABORATORY OF THE NATIONAL DEFENSE RESEARCH  
ORGANIZATION TNO, LANGE KLEIWEG 139, RIJSWIJK (Z.H.), THE NETHERLANDS

SOURCE TITLE :BIOCHEMICAL PHARMACOLOGY  
PERFORMING ORGANIZATION :  
MEDICAL BIOLOGICAL LABORATORY OF THE NATIONAL DEFENSE RESEARCH  
ORGANIZATION TNO, LANGE KLEIWEG 139, RIJSWIJK (Z.H.), THE NETHERLANDS  
SPONSORING ORGANIZATION :  
MEDICAL BIOLOGICAL LABORATORY OF THE NATIONAL DEFENSE RESEARCH  
ORGANIZATION TNO, LANGE KLEIWEG 139, RIJSWIJK (Z.H.), THE NETHERLANDS  
TITLE (DOCUMENT)  
THE INFLUENCE OF ATROPINE ON THE RELEASE AND UPTAKE OF ACETYLCHOLINE  
BY THE ISOLATED CEREBRAL CORTEX OF THE RAT  
ABSTRACT/DIGEST :  
BRAIN TISSUE BROUGHT IN CONTACT WITH ANTICHOLINESTERASE AGENTS  
RELEASES ACETYLCHOLINE (ACH) INTO ITS SURROUNDINGS. THE PRESENT  
STUDY INVESTIGATED THE INFLUENCE OF ATROPINE ON THE IN VITRO  
RELEASE AND UPTAKE OF ACH BY RAT BRAIN. RAT CORTICAL SLICES (150  
MG, 0.4 MM THICK) WERE PRETREATED WITH 0.005 MM SOMAN. INCUBATED  
FOR 1 HR AT 37C IN 2.5 ML OF MODIFIED KREBS SOLUTION (TO CORRECT  
FOR SUBSTANCES OTHER THAN ACH, WHICH MIGHT INFLUENCE SENSITIVITY  
OF THE ASSAY PREPARATION); THE MEDIUM WAS SATURATED WITH 95% O(SUB2)  
AND 5% CO(SUB2). (1.) ACH ACTIVITY OF SLICES AND INCUBATING MEDIA  
WAS ESTIMATED BY BIOASSAY ON THE ESERINIZED DORSAL LEECH MUSCLE.  
ACH WAS SET FREE INTO THE MEDIA DURING INCUBATION. FIVE TIMES AS  
MUCH ACH WAS RELEASED WHEN THE MEDIUM CONTAINED 25 MM KCL AS IN A  
4.7 MM KCL MEDIUM. THE ACH CONTENT OF THE TISSUE DID NOT CHANGE  
DURING INCUBATION IN EITHER MEDIUM. ADDITION OF 1 UG/ML ATROPINE  
SULFATE TO THE 25 MM KCL MEDIUM RESULTED IN A THREEFOLD ENHANCEMENT  
OF ACH RELEASE PLUS A RISE OF THE ACH CONTENT OF THE TISSUE.  
ATROPINE SULFATE (0.05 UG/ML) INCREASED THE ACH OUTPUT: 10 UG/ML  
PRODUCED THE SAME EFFECT AS 1 UG/ML. NO SIGNIFICANT ATROPINE EFFECT  
WAS OBSERVED IN A MEDIUM CONTAINING 4.7 MM KCL. (2.) UPTAKE OF  
ADDED ACH WAS STUDIED BY TREATING CORTICAL SLICES WITH SOMAN AND  
INCUBATING TISSUE IN A MEDIUM CONTAINING 4.7 MM KCL, 25 MM KCL,  
OR 25 MM KCL PLUS 1 UG/ML ATROPINE. ACH (4 UG/ML) WAS ADDED AT  
START OF INCUBATION. THERE WAS SIGNIFICANT TISSUE UPTAKE OF ACH  
AGAINST A CONCENTRATION GRADIENT. ATROPINE DID NOT SIGNIFICANTLY  
INHIBIT THIS UPTAKE IN A CONCENTRATION AT WHICH IT MOST ENHANCED  
THE OUTPUT OF ENDOGENOUS ACH. IN THE EXPERIMENTS USING NORMAL KREBS  
SOLUTION WHERE ENDOGENOUS ACH PRODUCTION WAS SMALL, ACH CONCENTRATION  
OF THE MEDIA DECREASED. A SMALLER DECREASE OF ACH IN THE MEDIUM WAS  
OBSERVED WITH THE 25 MM KCL SOLUTION. SMALLEST REDUCTION OF ACH  
WAS NOTED IN THE 25 MM KCL MEDIUM WITH ATROPINE, WHICH ALSO PRODUCED  
LARGE AMOUNTS OF ENDOGENOUS ACH. THE ADDED ACH WAS DISTRIBUTED  
SIMILARLY BETWEEN TISSUE AND MEDIUM IN ALL THREE MEDIA; DIFFERENCES  
IN RESULTS WERE CAUSED BY CHANGES IN THE CONCENTRATION OF ENDOGENOUS  
ACH IN TISSUES AND MEDIA PRODUCED BY ADDITION OF KCL AND ATROPINE

TO THE MEDIUM. (3.) THE EFFECT OF ATROPINE SULFATE ON UPTAKE OF ACH WAS STUDIED. KEEPING THE CONCENTRATION OF ADDED ACH CONSTANT DURING INCUBATION OF 75 MG SLICES IN 5 ML OF MEDIUM WITH 25 MM KCL FOR 30 MIN. ATROPINE (10 UG/ML) INHIBITED ACH UPTAKE BY 25% AND 100 UG/ML ATROPINE INHIBITED UPTAKE BY 70%. (4.) EFFECTS OF KCL AND ATROPINE ON ACH OUTPUT WAS INVESTIGATED USING A MEDIUM CONTAINING ESERINE SULFATE (0.4 MM) AS THE CHE INHIBITOR. ACH UPTAKE WAS EXTREMELY SMALL AND ACH CONCENTRATION IN THE TISSUE FELL TO APPROXIMATELY 4 UG/ML IN TESTS WHERE THE MEDIUM CONTAINED ESERINE SULFATE PLUS 25 MM KCL WITH OR WITHOUT ATROPINE. THE AUTHORS CONCLUDED THAT ESERINE SULFATE (0.4 MM) STRONGLY INHIBITS UPTAKE OF ACH, SIMILAR TO RESULTS OBTAINED WITH SOMAN.

BASIS KEY :121  
RECORD SECURITY :0

ITEM 121

ACCESSION NUMBER :00000293  
DISTRIBUTION STATUS :UL  
SECURITY CLASS :U  
COUNTRY CODE :CA  
NO. OF FICHE :0  
LANGUAGE CODE :ENG  
DOCUMENT TYPE :J  
NO. OF PAGES :13  
PUBLICATION YEAR :1972  
VOLUME NUMBER :200  
NO. OF GRAPHICS :7  
FICHE LOCATOR :0  
PAGE RANGE :231-244  
NO. OF REFERENCES :18  
AUTHORS :  
PRESTON E  
HEATH C  
CAS REGISTRY NUMBERS :  
51-55-8  
107-44-6  
55-91-4  
96-64-0  
INDEX TERMS :  
RESPIRATORY FAILURE  
INTOXICATION  
ORGANOPHOSPHATE CHOLINESTERASE INHIBITORS  
HYPOXIA  
CARDIOVASCULAR SYSTEM  
BLOOD PRESSURE  
HYPOTENSION  
BRADYCARDIA  
PERIPHERAL VASCULAR RESISTANCE  
CARDIOVASCULAR COLLAPSE  
ATROPINE  
SARIN  
CARDIOVASCULAR HOMEOSTASIS  
RATS  
DFP  
OXIME THERAPY  
SOMAN  
RABBIT (WHITE)  
AUTOPERFUSION  
VASAL VASOMOTOR TONE  
VASOMOTOR PATHWAY  
MYOCARDIAL TOXICITY



AFFILIATION :

DEFENCE RESEARCH ESTABLISHMENT, SUFFIELD, ALBERTA, CANADA, AND  
THE DEPARTMENT OF PHARMACOLOGY, UNIVERSITY OF ALBERTA, EDMONTON,  
ALBERTA, CANADA

SOURCE TITLE :ARCH. INT. PHARMACODYN.

PERFORMING ORGANIZATION :

DEFENCE RESEARCH ESTABLISHMENT, SUFFIELD, ALBERTA, CANADA, AND  
THE DEPARTMENT OF PHARMACOLOGY, UNIVERSITY OF ALBERTA, EDMONTON,  
ALBERTA, CANADA

SPONSORING ORGANIZATION :

DEFENCE RESEARCH ESTABLISHMENT, SUFFIELD, ALBERTA, CANADA, AND  
THE DEPARTMENT OF PHARMACOLOGY, UNIVERSITY OF ALBERTA, EDMONTON,  
ALBERTA, CANADA

TITLE (DOCUMENT)

ATROPINE-INSENSITIVE VASODILATATION AND HYPOTENSION IN THE  
ORGANOPHOSPHATE-POISONED RABBIT

ABSTRACT/DIGEST :

RESPIRATORY FAILURE IS THE PRIMARY CAUSE OF DEATH FROM INTOXICATION  
WITH THE ORGANOPHOSPHATE CHOLINESTERASE INHIBITORS. APART FROM  
THE EFFECT OF HYPOXIA, THESE COMPOUNDS DIRECTLY IMPAIR THE CARDIO-  
VASCULAR SYSTEM, WHICH MAY CONTRIBUTE TO A RAPIDLY FATAL OUTCOME.  
THE BLOOD PRESSURE RESPONSE IN UNTREATED LETHAL POISONING IS USUALLY  
HYPOTENSION, THE SEVERITY OF WHICH IS GOVERNED BY INTERACTION OF  
A DECREASE IN CARDIAC OUTPUT DUE TO BRADYCARDIA AND AN INCREASE IN  
PERIPHERAL VASCULAR RESISTANCE. LOWERED CARDIAC OUTPUT CAUSES  
STAGNANT HYPOXIA, WHICH ALSO PROMOTES CARDIOVASCULAR COLLAPSE.  
ARTIFICIALLY VENTILATED AND ATROPINIZED ANIMALS MAINTAIN A NORMAL  
BLOOD PRESSURE THOUGH POISONED WITH VERY LARGE DOSES OF SARIN.  
THIS IMPLIES THAT ATROPINE AND ARTIFICIAL VENTILATION WILL ENSURE  
CARDIOVASCULAR HOMEOSTASIS DESPITE SEVERE INTOXICATION. IT HAS  
BEEN SHOWN, HOWEVER, THAT RATS DIE OF CARDIAC FAILURE FOLLOWING A  
LARGE DOSE OF DIISOPROPYL PHOSPHONOFUORIDATE (DFP) DESPITE ATROPINE,  
ARTIFICIAL VENTILATION, AND OXIME THERAPY. IN THE PRESENT STUDIES,  
LARGE DOSES OF SOMAN, SARIN, OR DFP ADMINISTERED INTRAVENOUSLY  
CAUSED SEVERE AND RAPID HYPOTENSION IN THE ANESTHETIZED WHITE RABBIT  
DESPITE BOTH ARTIFICIAL VENTILATION AND ATROPINE TREATMENT SUFFICIENT  
TO PREVENT BRADYCARDIA. HYPOTENSION RESULTS FROM AN ATROPINE-  
INSENSITIVE VASODILATATION, DEMONSTRATED IN THE AUTOPERFUSED  
FORELIMB. SOMAN INDUCES DEPRESSION OF BASAL VASOMOTOR TONE:  
HOWEVER, THIS IS ANTAGONIZED BY ATROPINE WHILE SYSTEMIC HYPOTENSION  
REMAINS PROFOUND. IT IS SUGGESTED THAT HYPOTENSION STEMS FROM  
ORGANOPHOSPHATE EFFECTS WITHIN THE NEURONAL PORTION OF THE VASOMOTOR  
PATHWAY. THERE IS NO INDICATION THAT SOMAN HAS A MYOCARDIAL TOXIC  
PROPERTY.

BASIS KEY :122

RECORD SECURITY :0

ITEM 95

ACCESSION NUMBER :00000181  
DISTRIBUTION STATUS :UL  
SECURITY CLASS :U  
COUNTRY CODE :CA  
NO. OF FICHE :0  
LANGUAGE CODE :ENG  
DOCUMENT TYPE :J  
NO. OF PAGES :6  
PUBLICATION YEAR :1975  
VOLUME NUMBER :34  
NO. OF GRAPHICS :2  
FICHE LOCATOR :0  
PAGE RANGE 127-132  
NO. OF REFERENCES :22  
AUTHORS :  
JOHNSON DENNIS D  
WILCOX WILLIAM C  
CAS REGISTRY NUMBERS :  
439-14-5  
96-64-0  
51-84-3  
50-06-6  
55-48-1  
INDEX TERMS :  
DIAZEPAM  
ANTICHOLINESTERASE  
SOMAN  
ACETYLCHOLINE  
BRADYCARDIA  
RABBITS  
VALIUM  
RESPIRATION  
PENTOBARBITAL  
ATROPINE SULFATE  
TACHYCARDIA  
HEART RATE  
HERING-BREUER REFLEX  
RESPIRATORY DEPRESSION  
BLOOD PRESSURE  
HYPOTENSION  
AFFILIATION :  
DEPARTMENT OF PHARMACOLOGY, COLLEGE OF MEDICINE, UNIVERSITY OF  
SASKATCHEWAN, SASKATOON, CANADA S7N 0W0  
SOURCE TITLE :EUROPEAN JOURNAL OF PHARMACOLOGY

PERFORMING ORGANIZATION :

DEPARTMENT OF PHARMACOLOGY, COLLEGE OF MEDICINE, UNIVERSITY OF  
SASKATCHEWAN, SASKATOON, CANADA S7N 0W0

SPONSORING ORGANIZATION :

DEPARTMENT OF PHARMACOLOGY, COLLEGE OF MEDICINE, UNIVERSITY OF  
SASKATCHEWAN, SASKATOON, CANADA S7N 0W0

TITLE (DOCUMENT)

STUDIES ON THE MECHANISM OF THE PROTECTIVE AND ANTIDOTAL ACTIONS  
OF DIAZEPAM IN ORGANOPHOSPHATE POISONING

ABSTRACT/DIGEST

PREVIOUS STUDIES SUGGEST THAT DIAZEPAM PROVIDES ANTIDOTAL ACTIVITY AGAINST ANTICHOLINESTERASE AGENTS SUCH AS SOMAN BY PREVENTING SOME OF THE CENTRAL EFFECTS OF EXCESS ACETYLCHOLINE. TO MEASURE DIAZEPAM'S EFFECT ON SOMAN-INDUCED BRADYCARDIA, SIX UNANESTHETIZED RABBITS WERE ADMINISTERED 10 UG/KG I.V. SALINE-DILUTED SOMAN, SIX WERE GIVEN 1 MG/KG DIAZEPAM (VALIUM), WHILE SIX WERE GIVEN THE ABOVE DOSES OF DIAZEPAM FOLLOWED BY SOMAN. TO MEASURE DIAZEPAM'S EFFECT ON RESPIRATORY DEPRESSION, ARTIFICIALLY VENTILATED RABBITS, ANESTHETIZED WITH 35 MG/KG PENTOBARBITAL AND PRE-TREATED WITH 1.2 MG/KG ATROPINE SULFATE WERE TESTED IN THE SAME WAY: SIX WERE GIVEN DIAZEPAM, SIX SOMAN, SIX SOMAN FOLLOWED BY ATROPINE, AND TEN SOMAN FOLLOWED BY ATROPINE AND DIAZEPAM. UNANESTHETIZED RABBITS GIVEN SOMAN SHOWED SEVERE BRADYCARDIA (83% OF CONTROL) AND THOSE GIVEN DIAZEPAM SHOWED TEMPORARY TACHYCARDIA (REVERSED WITHIN 30 MIN). DIAZEPAM PRETREATMENT PREVENTED ABNORMAL HEART RATES, (103 +/- 8.5% OF CONTROL). IN ANESTHETIZED ANIMALS (RESULTS NOT PRESENTED STATISTICALLY), DIAZEPAM (1 MG/KG) PRODUCED SLIGHT DEPRESSION OF THE RESPIRATORY RATE, SOMAN (10 UG/KG) REDUCED THE DEPTH OF RESPIRATION AND/OR INHIBITED THE HERING-BREUER REFLEX DURING EXPIRATION, WITHOUT RECOVERY WITHIN 30 MIN. SIMILAR DOSAGES IN COMBINATION (DIAZEPAM AFTER SOMAN) FAILED TO REVERSE RESPIRATORY DEPRESSION AND PRODUCED FURTHER RESPIRATORY IMPAIRMENTS. PRETREATMENT WITH 1.2 MG/KG ATROPINE BLOCKED SOMAN-INDUCED BRADYCARDIA, AND REDUCED BLOOD PRESSURE MODESTLY. DIAZEPAM FOLLOWING SOMAN REDUCED BLOOD PRESSURE FURTHER, AN EFFECT WHICH ATROPINE APPEARED TO BLOCK. BOTH SOMAN-INDUCED HYPOTENSION AND ITS REVERSAL WITH SUBSEQUENT ATROPINE (1.2 MG/KG) COINCIDED WITH CHANGES IN RESPIRATORY FUNCTION. PRE-TREATMENT WITH ATROPINE ALONE DID NOT PREVENT RESPIRATORY DEPRESSION, THOUGH A SECOND DOSE AFTER SOMAN REVERSED IT, INDICATING A DOSE-RESPONSE RELATIONSHIP. IN SUMMARY, ADMINISTRATION OF DIAZEPAM FOLLOWING SOMAN-INDUCED RESPIRATORY DEPRESSION EXACERBATED THE DEPRESSION AND RENDERED RABBITS LESS SUSCEPTIBLE TO ATROPINE. THE ANTIDOTAL EFFECTS OF DIAZEPAM ARE THUS NOT ASCRIBED TO REVERSAL OF RESPIRATORY DEPRESSION. IN CONCLUSION, THE PROTECTIVE EFFECTS OF DIAZEPAM ARE ASCRIBED TO BOTH A NON-SPECIFIC ANTI-CONVULSANT EFFECT THAT REDUCES IMPAIRMENT TO RESPIRATORY CENTERS AND TO THE PREVENTION OF BRADYCARDIA.

BASIS KEY :95

RECORD SECURITY :0

ITEM 24

ACCESSION NUMBER :00000059  
DISTRIBUTION STATUS :UL  
SECURITY CLASS :U  
COUNTRY CODE :NL  
NO. OF FICHE :0  
LANGUAGE CODE :ENG  
DOCUMENT TYPE :J  
NO. OF PAGES :19  
PUBLICATION YEAR :1970  
NO. OF GRAPHICS :8  
FICHE LOCATOR :0  
PAGE RANGE :113-131  
NO. OF REFERENCES :23  
AUTHORS :  
COHEN E M  
CHRISTEN P J  
MOBACH MISS E  
CAS REGISTRY NUMBERS :  
107-44-6  
57-71-6  
96-64-0  
INDEX TERMS :  
SARIN  
32-P SARIN  
HYDROLYSIS  
DAM  
DIACETYL MONOXIME  
PLASMA  
RATS (ALBINO)  
GUINEA PIGE (WHITE)  
MICE  
HEART  
CAROTID ARTERY  
HUMAN PLASMA  
PLASMA ALTESTERASE  
SOMAN  
AFFILIATION :  
MEDICAL BIOLOGICAL LABORATORY TNO, 139 LANGE KLEIWEG, RIJSWIJK  
(Z11), THE NETHERLANDS  
SOURCE TITLE :MEDICINE  
PERFORMING ORGANIZATION :  
MEDICAL BIOLOGICAL LABORATORY TNO, 139 LANGE KLEIWEG, RIJSWIJK  
(Z11), THE NETHERLANDS  
SPONSORING ORGANIZATION:  
MEDICAL BIOLOGICAL LABORATORY TNO, 139 LANGE KLEIWEG, RIJSWIJK  
(Z11), THE NETHERLANDS

TITLE (DOCUMENT) :

THE INACTIVATION BY OXIMES OF SARIN AND SOMAN IN PLASMA FROM VARIOUS SPECIES I. THE INFLUENCE OF DIACETYL MONOXIME ON THE HYDROLYSIS OF SARIN

ABSTRACT/DIGEST

A METHOD IS GIVEN FOR MEASURING HYDROLYSIS OF LOW CONCENTRATIONS OF 32-P SARIN BASED UPON MEASUREMENT OF THE NON-VOLATILE HYDROLYSIS PRODUCT. DEMONSTRATION WITH 32-P SARIN PERMITTED A STUDY OF THE INFLUENCE OF DIACETYL MONOXIME (DAM) ON THE HYDROLYSIS OF: (1) HEPARINIZED PLASMA OBTAINED FROM THE HEART OR CAROTID ARTERIES OF FEMALE ALBINO RATS, WHITE GUINEA PIGS, OR INBRED FEMALE MICE; AND (2) HUMAN PLASMA FROM VOLUNTEERS. SAMPLES WERE INTOXICATED WITH 0.1 MM SARIN AND CENTRIFUGED FOR 20 MIN. IN ALL SAMPLES, HYDROLYSIS WAS AIDED BY SARINASE AND BY DIRECT INTERACTION OF DAM WITH SARIN. IN THE MOUSE AND RATS, DAM GREATLY ENHANCED THE DESTRUCTION OF SARIN; AT 1 MM DAM, SARIN IN THE RAT WAS COMPLETELY HYDROLYZED IN 2 MIN. RESULTS CONFIRMED EARLIER FINDINGS THAT DAM UNTIL SARIN IS HYDROLYZED. A SUBSEQUENT PAPER FROM THIS STUDY DEALS WITH SOMAN.

BASIS KEY

:24

RECORD SECURITY

:0

ITEM 7

ACCESSION NUMBER :00000024  
DISTRIBUTION STATUS :UL  
SECURITY CLASS :U  
COUNTRY CODE :UK  
NO. OF FICHE :0  
LANGUAGE CODE :ENG  
DOCUMENT TYPE :J  
NO. OF PAGES :2  
PUBLICATION YEAR :1953  
VOLUME NUMBER :46  
NO. OF GRAPHICS :0  
FICHE LOCATOR :0  
PAGE RANGE :801-802  
NO. OF REFERENCES :6  
AUTHORS :  
BERRY W K  
CAS REGISTRY NUMBERS :  
107-44-6  
77-81-6  
96-64-0  
55-91-4  
59-92-7  
INDEX TERMS :  
BIOCHEMICAL MECHANISMS  
ANTICHOLINESTERASE POISONING  
CHOLINESTERASE  
SARIN  
TOXICITY  
DOPA  
3,4,DIHYDROXYPHENYLALANINE  
O-DIHYDROXYBENZENE DERIVATIVES  
TABUN  
SOMAN  
DFP  
DOPA-SARIN REACTION  
INHIBITION  
ENZYMES  
DOPA OXIDATION  
AFFILIATION :  
ARMY CHEMICAL DEFENCE ESTABLISHMENT PORTON DOWN, ENGLAND, AND  
MINISTRY OF SUPPLY, ENGLAND  
SOURCE TITLE :SECTION OF EXPERIMENTAL MEDICINE AND  
THERAPEUTICS

PERFORMING ORGANIZATION :  
ARMY CHEMICAL DEFENCE ESTABLISHMENT PORTON DOWN, ENGLAND, AND  
MINISTRY OF SUPPLY, ENGLAND

SPONSORING ORGANIZATION :  
ARMY CHEMICAL DEFENCE ESTABLISHMENT PORTON DOWN, ENGLAND, AND  
MINISTRY OF SUPPLY, ENGLAND

TITLE (DOCUMENT)  
BIOCHEMICAL MECHANISMS INVOLVED IN POISONING BY ANTICHOLINESTERASES  
ABSTRACT/DIGEST

EXPERIMENTATION WAS DONE SEEKING A CHEMICAL RESEMBLING THE ACTIVE  
CENTER OF CHOLINESTERASE (CHE), WHICH WOULD BE NONTOXIC AND YET BE  
ABLE TO COMBINE WITH SARIN FAST ENOUGH TO PROTECT AN ORGANISM  
AGAINST SARIN'S TOXIC SIDE-EFFECTS. THE CHEMICAL, 3,4,DIHYDROXY-  
PHENYLALANINE (DOPA), AND OTHER O-DIHYDROXYBENZENE DERIVATIVES  
WERE ABLE TO PROTECT TRUE AND PSEUDO-CHES AGAINST SARIN, TABUN,  
AND SOMAN AND, TO A LESSER EXTENT, DFP. A DIRECT DOPA-SARIN  
REACTION APPEARED TO BE INVOLVED, BUT TENTATIVE CONCLUSIONS ARE  
THAT THE ACTIVE CENTER OF CHE WAS NOT PHENOLIC. DOPA DID NOT  
REVERSE INHIBITION BY SARIN. ITS PROTECTIVE EFFECT DISAPPEARED  
ON DILUTION TO A DEGREE THAT WAS THERAPEUTICALLY IMPRACTICABLE.  
A FURTHER CONCLUSION WAS THAT DOPA MIGHT BE THE PRECURSOR OF A MORE  
ACTIVE SUBSTANCE. STUDY OF THE PRODUCTS OF ENZYMIC AND NON-ENZYMIC  
OXIDATION OF DOPA FAILED TO SHOW SUCH A SUBSTANCE.

BASIS KEY :7

RECORD SECURITY :0

ITEM 8

ACCESSION NUMBER	:00000026
DISTRIBUTION STATUS	:UL
SECURITY CLASS	:U
COUNTRY CODE	:UK
NO. OF FICHE	:0
LANGUAGE CODE	:ENG
DOCUMENT TYPE	:J
NO. OF PAGES	:2
PUBLICATION YEAR	:1970
VOLUME NUMBER	:20
NO. OF GRAPHICS	:0
FICHE LOCATOR	:0
PAGE RANGE	:1333-1334
NO. OF REFERENCES	:10
AUTHORS	:
BERRY W K	
CAS REGISTRY NUMBERS	:
107-49-3	
51-15-0	
96-64-0	
51-84-3	
154-97-2	
56-97-3	
51-55-8	
INDEX TERMS	:
DIAPHRAGM	
ACETYLCHOLINESTERASE	
TETRAETHYL PYROPHOSPHATE	
PRALIDOXIME	
GUINEA PIGS	
RATE	
RAT DIAPHRAGM	
GUINEA PIG DIAPHRAGM	
TEPP	
LD50	
SOMAN	
HYDROLYSIS	
ACETYLCHOLINE	
OXIMES	
P2S	
TMB-4	
ATROPINE	
REACTIVATION	
AFFILIATION	:
CHEMICAL DEFENCE ESTABLISHMENT, PORTON DOWN, WILTS., ENGLAND	



SOURCE TITLE :BIOCHEMICAL PHARMACOLOGY  
PERFORMING ORGANIZATION :  
CHEMICAL DEFENCE ESTABLISHMENT, PORTON DOWN, WILTS., ENGLAND  
SPONSORING ORGANIZATION :  
CHEMICAL DEFENCE ESTABLISHMENT, PORTON DOWN, WILTS., ENGLAND  
TITLE (DOCUMENT)  
SOME SPECIES DIFFERENCES IN THE RATES OF REACTION OF DIAPHRAGM  
PARTICULATE ACETYLCHOLINESTERASES WITH TETRAETHYL PYROPHOSPHATE  
AND PRALIDOXIME  
ABSTRACT/DIGEST

THE DEMONSTRATED EXISTENCE OF TWO FORMS OF ACHE IN THE GUINEA PIG AND RAT DIAPHRAGM -- SOLUBLE AND PARTICULATE FRACTIONS -- HAS BEEN PROPOSED TO EXPLAIN THE FAILURE OF TETRAETHYL PYROPHOSPHATE (TEPP) PRETREATMENT TO RAISE THE LD50 OF SOMAN FOR RATS BY THE SAME DEGREE APPLICABLE TO OTHER SPECIES. THE PRESENT STUDY EXPLORED THE KINETIC PROPERTIES OF GUINEA PIG AND RAT PARTICULATE ACHE TO EXPLAIN THIS PHENOMENON. THE VELOCITY OF HYDROLYSIS OF 5.5 MM ACETYLCHOLINE (ACH) WAS MEASURED FOLLOWED BY ADDITION OF 1 MM TEPP. RESULTS SHOWED THAT TEPP INHIBITION WAS PSEUDO-REVERSIBLE, BEING STABLE PRIOR TO ADDITION OF OXIME. TEPP INHIBITION OF GUINEA PIG DIAPHRAGMS SHOWED 15-20% INHIBITION WITHIN 40-50 MIN, WHILE SUBSEQUENT ADDITION OF 2-HYDROXYIMINOMETHYL-N-METHYL PYRIDINIUM METHANESULPHONATE (P2S) EQUIVALENT TO THE DIAPHRAGMATIC PORTION 30-60 MIN AFTER 30 MG/KG I.M. PRODUCED REACTIVATION TO 20-30% OF NORMAL AFTER 45-50 MIN. AN EQUIVALENT DOSE OF TMB-4 (1,3-DI (4-HYDROXYIMINO METHYLPYRIDINIUM) PROPANE DIHALIDE) PRODUCED REACTIVATION TOO RAPID TO PLOT. THE SAME CONCENTRATION OF TEPP INHIBITED RAT PREPARATIONS TOO RAPIDLY TO DEVELOP RATE CONSTANTS, REACHING THE LEVELS SEEN IN GUINEA PIGS. SUBSEQUENT P2S CAUSED RAPID REACTIVATION TO 25% OF NORMAL. THE AUTHOR CONCLUDES THAT THE MAJOR FACTOR IN TEPP PROTECTION IS THE SPEED OF INHIBITION AND REACTIVATION. IF GIVEN TO GUINEA PIGS 1 MIN BEFORE SOMAN, PROTECTION WAS EQUIVALENT TO THAT OF ATROPINE AND P2S ALONE, WHILE MAXIMAL PROTECTION RESULTED FROM PRETREATMENT AT 0.5-5 HR PRIOR TO SOMAN. P2S IS EFFECTIVE IN THE GUINEA PIG BECAUSE REACTIVATION LAGS BEHIND SOMAN CLEARANCE FROM THE DIAPHRAGM, WHEREAS RAPID REACTIVATION OCCURS IN THE RAT IN THE PRESENCE OF FREE SOMAN. TMB-4 IS INEFFECTIVE IN THE GUINEA PIG BECAUSE OF THE SAME PHENOMENON OF TOO-RAPID REACTIVATION.

BASIS KEY :8  
RECORD SECURITY :0

ITEM 9

ACCESSION NUMBER :00000031  
DISTRIBUTION STATUS :UL  
SECURITY CLASS :U  
COUNTRY CODE :UK  
NO. OF FICHE :0  
LANGUAGE CODE :ENG  
DOCUMENT TYPE :J  
NO. OF PAGES :2  
PUBLICATION YEAR :1966  
VOLUME NUMBER :15  
NO. OF GRAPHICS :7  
FICHE LOCATOR :0  
PAGE RANGE :1259-1266  
NO. OF REFERENCES :11  
AUTHORS :  
BERRY W K  
DAVIES D R  
RUTLAND J P  
CAS REGISTRY NUMBERS :  
96-64-0  
51-55-8  
107-44-6  
INDEX TERMS  
SOMAN  
SARIN  
3-METHYLBUTYL-2-METHYLPHOSPHONOFUORIDATE  
MBPF  
DIAPHRAGM ACETYLCHOLINESTERASE  
RATS  
TUB-4  
ATROPINE  
OXIMES  
ORGANOPHOSPHATES  
AFFILIATION :  
ARMY DEPT., CHEMICAL DEFENCE EXPERIMENTAL ESTABLISHMENT, PORTON DOWN,  
SALISBURY, WILTS.  
SOURCE TITLE :BIOCHEMICAL PHARMACOLOGY  
PERFORMING ORGANIZATION :  
ARMY DEPT., CHEMICAL DEFENCE EXPERIMENTAL ESTABLISHMENT, PORTON DOWN,  
SALISBURY, WILTS.  
SPONSORING ORGANIZATION :  
ARMY DEPT., CHEMICAL DEFENCE EXPERIMENTAL ESTABLISHMENT, PORTON DOWN,  
SALISBURY, WILTS.  
TITLE (DOCUMENT) :  
PROBLEMS IN THE TREATMENT WITH OXIMES AND ATROPINE OF RATS POISONED  
BY ORGANOPHOSPHATES

ABSTRACT/DIGEST

SINCE SOMAN-INACTIVATED ACETYLCHOLINESTERASE (ACHE) CANNOT BE REACTIVATED UNDER PHYSIOLOGICAL CONDITIONS, AN ATTEMPT HAS BEEN MADE TO ASSESS THE SIGNIFICANCE OF AGING IN VIVO USING THE SOMAN HOMOLOGUE 3-METHYLBUTYL-2-METHYLPHOSPHONOFUORIDATE (MBPF). SOMAN ITSELF WAS NOT PART OF THE EXPERIMENT, BUT PREVIOUS STUDIES USING SOMAN WERE CITED. SARIN WAS USED FOR COMPARISON WITH MBPF. THIS EXPERIMENT ATTEMPTS TO REACTIVATE DIAPHRAGM ACHE OF THE RAT IN VITRO WITH IMB-4 AND ATROPINE.

BASIS KEY :9

RECORD SECURITY :0

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# THESAURUS

Edited Edition

Prepared by:

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October 21, 1981

### Introductory Notes

A desirable objective in an information system is the consistent representation of subject matter in both indexing and searching operations. To this end a controlled standardized vocabulary is frequently used so that both indexing and searching can be conducted using a common language.

The thesaurus serves as an authority list for use in both information indexing and retrieval. It represents an organized, comprehensive, and structured vocabulary listing the terms that have been accepted and approved as a standard by participating members of a specialized user group, in a defined area of information. It specifies those terms that are allowed as authorized "descriptors". The thesaurus identifies the scope of each term so that all terms are clear and discrete. Ideally, the terms in the thesaurus are sufficiently comprehensive for the identification and communication of information in the defined area covered by the information system.

One of the more important functions of the thesaurus is to display the relationships among terms in the vocabulary, thus aiding the indexer and searcher to select the most appropriate terms when indexing documents, or formulating search requests.

The thesaurus shows synonymous, hierarchical and other relationships. Such a controlled vocabulary promotes maximum consistency in the description of concepts. It serves further as a store of intellectual decisions that have been made as a result of previous indexing and searching operations.

The present thesaurus was designed for post-coordinate indexing. In such a system many terms are combined at the search stage. It was prepared to serve as a base for an open-ended microthesaurus to be used for a specialized data base, and was derived from the following sources:

- (1) Actual documents in the data base
- (2) MeSH (Medical Subject Headings, National Library of Medicine)
- (3) Chemical Abstracts Index Guide (American Chemical Society)
- (4) Merck Index
- (5) Various biomedical and scientific dictionaries and encyclopedias

As new documents are added to the data base, the thesaurus will be expanded accordingly.

Cross references employed in the thesaurus are:  
USE; USED FOR; RELATED TERM; BROADER TERM; and NARROWER TERM.  
Scope notes are included where necessary.

(1) USE

The USE reference is intended to lead thesaurus users from a term that is not an authorized term to one that is authorized for indexing and searching.

The USE reference leads to the preferred term.

(2) USED FOR

The USED FOR (UF) reference is the reciprocal of the USE reference, and accompanies the term to which the USE reference refers. It is the reverse of a USE reference, and indicates the access points in the thesaurus referring to the term to be used.

(3) BROADER TERM

The BROADER TERM (BT) reference is employed to refer from a term representing a member of a class of concepts to the term naming that class, for example:

Mammals            BT    Vertebrates

For each BROADER TERM reference there must also be provided a corresponding NARROWER TERM. The broader term may be one which is higher in a hierarchical relationship than the one under which it appears.

(4) NARROWER TERM

The NARROWER TERM (NT) reference is the reciprocal of the BROADER TERM (BT). The NT is employed to identify the term as a member of the class represented by the entry, for example:

Vertebrates    NT    Mammals

For each NARROWER TERM reference there must be provided a corresponding BROADER TERM reference. The narrower term, which is the opposite of the broader term, may be used to indicate terms lower in a hierarchical relationship than the one under which it appears.

The whole-part relationship may in some cases be used with the NT/BT designation.

(5) RELATED TERM

The RELATED TERM (RT) reference is employed as a guide from a given term to other terms that are closely related in ways other than the genus-species (BT/NT) relationship. In general, any two terms bear the cross-reference RT to each other if it is believed that the user, when examining one of them, might want to be reminded of the existence of the other. The RT advises the indexer or searcher to consider also the terms designated as related.

(6) SCOPE NOTES

The scope note which accompanies the term, but is not a part of it, is used to designate the scope of the term. It may be used to exclude a possible meaning from the term, and indicate the acceptable term to use for that meaning, or explicitly to include an uncommon meaning under a term. It is used to indicate any intended restrictions in the use of the term. In case of possible misunderstanding, it is used to define a term.

(7) PARENTHETICAL QUALIFIERS

Used sparingly, the parenthetical qualifier may be appended to a term to distinguish among homographs, for example.

Mercury (metal)  
Mercury (planet)

The parenthetical qualifier is considered as a part of the term, in contrast to the definition given in a scope note.

Thesaurus Displays

A thesaurus may be complete with only an alphabetic display of terms with cross references. In the present thesaurus it is recommended that a numerical and alphabetical display indicating Chemical Abstracts registry numbers be included. At a later period it may be decided that other displays would be useful, for example, a tree-structure display, and a permuted display of terms in which each word of multi-word terms may be accessed alphabetically.



AATP  
    U Parathion  
Abate  
    BT Insecticides, organothiophosphate  
Abdomen  
Abnormalities  
    NT Deformities  
Absorption, skin  
    U Skin absorption  
Acetic acid phenyl ester  
    U Phenyl acetate  
Acetone 67-64-1  
Acetonitrile 75-05-8  
    UF Cyanomethane  
    UF Methyl cyanide  
3-Acetoxyindole  
    U Indoxyl acetate  
7-Acetoxy-1-methylquinolinium iodide  
    U 7-Ac-Q  
8-Acetoxy-1-methylquinolinium iodide  
    U 8-Ac-Q  
2-Acetoxy-naphthalene  
    U Beta-Naphthyl acetate  
Acetylation  
Acetylcarnitine 14992-62-2  
    UF Carnitine Acetyl Ester  
Acetylcarnitine chloride  
    U Acetylcarnitine hydrochloride  
Acetylcarnitine hydrochloride 33661-41-5 4326-58-3 5080-50-2  
    UF Acetylcarnitine chloride  
Acetylcholine 51-84-3  
    UF Ethanaminium, 2-(acetyloxy)-N,N,N-trimethyl-  
Acetylcholine bromide 66-23-9  
Acetylcholine chloride 60-31-1  
Acetylcholine hydrolase  
Acetylcholine iodide  
Acetylcholine receptor

Acetylcholine release  
Acetylcholinesterase  
    U AChE  
Acetylcholinesterase inhibition  
Acetylcholinesterase inhibitors  
Acetylcholine uptake  
Acetylcholine chloride 60-31-1  
Acetylcholine perchlorate  
Acetyl-beta-methylcholine  
    U Methacholine  
Acetyl-beta-methylcholine bromide  
    U Methacholine bromide  
Acetyl-beta-methylcholine chloride  
    U Methacholine chloride  
O-Acetyl-beta-naphthol  
    U Beta-Naphthyl acetate  
Acetyl phenol  
    U Phenyl acetate  
Acetylthiocholine 4468-05-7  
    BT Choline  
Acetylthiocholine iodide  
Acetyltransferase, choline 9012-78-6  
    UF Choline acetylase  
    UF Choline acetyltransferase  
Acetyltransferases  
Acetyltyrosine ethyl ester  
    U N-Acetyl-L-tyrosine ethyl ester  
Acetyl-L-tyrosine ethyl ester  
    U N-Acetyl-L-tyrosine ethyl ester  
N-Acetyl-L-tyrosine ethyl ester 840-97-1  
    UF Acetyltyrosine ethyl ester  
    UF Acetyl-L-tyrosine ethyl ester  
    UF Acetyl-L-tyrosyl ethyl ester  
    UF ATEE  
    UF Ethyl N-acetyl-L-tyrosinate  
    UF Ethyl acetyltyrosinate

Acetyl-L-tyrosyl ethyl ester  
     U Acetyl-L-tyrosine ethyl ester  
 AChE  
     BT Cholinesterases  
     UF Acetylcholinesterase  
 Acid-base equilibrium  
     NT Buffers  
 Acidity  
     RT pH  
 Acids  
     RT Bases  
 Acocantherin  
     U Ouabain  
 7-Ac-Q  
     UF 7-Acetoxy-1-methylquinolinium iodide  
 8-Ac-Q  
     UF 8-Acetoxy-1-methylquinolinium iodide  
 9-Acridinamine, 1,2,3,4-tetrahydro-  
     U Tacrine  
 Actinomycin D 50-76-0  
     UF Cosmegen  
     UF Dactinomycin  
     UF Meractinomycin  
 Acyl groups  
     U Radicals, acyl  
 Adaptation, biological  
 Adenosine 58-61-7  
     BT Nucleosides  
 Adenosine 3'5'-cyclic monophosphate 60-92-4  
     UF cAMP  
     UF cyclic AMP  
 Adenosine, N-(1-oxobutyl)-, cyclic 3', 5'-(hydrogen phosphate) 2'-butanoate  
     U Dibutyryl cyclic AMP  
 Adenosine 5'-phosphorimidazolid 20816-58-4  
 Adenosine triphosphatase  
     BT Phosphatases  
     UF ATPase  
 Adenosine triphosphate 56-65-5  
     UF ATP  
 Adenylate cyclase 9012-42-4  
     UF Adenyl cyclase  
     UF Adenylyl cyclase  
     UF Cyclase, adenylate  
 Adenyl cyclase  
     U Adenylate cyclase

Adenyl cyclase  
  U Adenylate cyclase  
Adephenine hydrochloride  
  U Trasentine hydrochloride  
Adiphenine 64-95-9  
  UF Benzeneacetic acid, alpha-phenyl-, 2(diethylamino)ethyl ester  
Adrenal Cortex  
  BT Adrenal glands  
Adrenal glands  
  BT Endocrine glands  
  NT Adrenal Cortex  
  NT Adrenal Medulla  
  NT Interrenal gland  
Adrenaline  
  U Epinephrine  
Adrenal Medulla  
  BT Adrenal glands  
Aging  
Aging rate  
Air sacs  
  RT Lung  
Albumins  
Alcohol, ethyl  
  U Ethanol  
Alcohol, methyl  
  U Methanol  
Alcohols  
Aldicarb 116-06-3  
  BT Insecticides, carbamate  
Aliesterase  
  U Esterase, carboxyl  
Alitinal  
  U Amobarbital sodium  
Alkaloids  
Alkoxy  
  U Radicals, alkoxy  
Alkylation  
Alkyl radicals  
  U Radicals, alkyl  
Allergens  
  RT Hypersensitivity  
Allergy  
  RT Hypersensitivity  
Allosteric regulation  
AM-1 71006-78-5  
  UF O-Ethyl, S-diethylaminoethyl ethylphosphonothiolate  
  UF 1H-Imidazole-1-ethanol, alpha-(methoxymethyl)-2-methyl-4-nitro-

Amibenonium chloride 115-79-7  
BT Cholinesterase inhibitors  
UF Ambestigminum  
Ambestigminum  
U Amibenonium chloride  
Amechcl  
U Methacholine bromide  
Amines  
RT Amino compounds  
gamma-Aminobutyric acid  
U GABA  
Amino compounds  
RT Amines  
RT Nitrogen  
beta-Aminoethylglyoxaline  
U Histamine  
Aminoethylphosphonic acid  
BT Organophosphorus compounds  
2-Amino-3-hydroxypropionic acid  
U Serine  
alpha-Aminoisocaproic acid  
U Leucine  
2-Amino-4-methylvaleric acid  
U Leucine  
Aminooxyacetic acid hemihydrochloride 2921-14-4  
Aminophylline 317-34-0  
4-Amino-1-beta-D-ribofuranosyl-2-(1H)-pyrimidinone  
U Cytidine  
9-Amino-1, 2, 3, 4-tetrahydroacridine  
U Tacrine  
Aminotransferase, aspartate  
U Glutamic oxalacetic transaminase  
Amiton 78-53-5 3734-97-2  
BT Cholinesterase inhibitors  
BT Insecticides  
UF O, O-Diethyl S-2-diethylaminoethyl phosphorothioate  
UF DSDP  
UF Inferno  
UF Metramac  
UF Phosphorothioic acid, esters, S-2[(diethylamino)ethyl] O, O-diethyl est  
UF Tetrain  
Ammonium fluoride 12125-01-8  
Amobarbital sodium 35942-73-5 64-43-7  
UF Alitinal  
UF Amylobarbitone sodium  
UF Amytal sodium  
UF Sodium amobarbital

## Amobarbital sodium (cont'd)

- UF Sodium amytal
- Amygdala
  - U Amygdaloid body
- Amygdaloid body
  - UF Amygdala
- Amylacetate ester
  - U Isoamyl acetate
- Amylobarbitone sodium
  - U Amobarbital sodium
- Amytal sodium
  - U Amobarbital sodium
- Anaerobiosis
  - BT Metabolism
- Analgesia
  - RT Pain
- Anaphylaxis
  - RT Hypersensitivity
- Anesthesia
- Anesthesia adjuvants
- Anesthesia, conduction
  - UF Anesthesia regional
- Anesthesia, general
- Anesthesia, inhalation
- Anesthesia, intravenous
- Anesthesia, local
- Anesthesia, regional
  - U Anesthesia, conduction
- Anesthesia, spinal
- Anesthetics
- Anesthetics, local
- Animals
  - NT Laboratory animals
- Animals, laboratory
  - U Laboratory animals
- Animal testing
  - RT Laboratory animals
- Anions
- Anoxia
  - UF Hypoxia
  - UF Oxygen deficiency
- Antagonism
- Antagonists
- Anthracenecarboxylic acid
  - UF Anthroic acid
- Anthroic acid
  - U Anthracenecarboxylic acid
- Anti-arrhythmia agents
  - UF Antifibrillatory agents
  - UF Cardiac depressants
  - UF Myocardial depressants
- Antibody diversity

## Antibody diversity (cont'd)

- BT Immunity
- Antibody formation
  - BT Immunity
- Antibody specificity
  - BT Immunity
- Anticholinergic agents
  - U Parasympatholytics
- Anticholinesterase activity
  - U Cholinesterase inhibitors
- Anticholinesterase agents
  - U Cholinesterase inhibitors
- Anticonvulsants
- Antidotes
  - RT Poisoning
- Antifibrillatory agents
  - U Anti-arrhythmia agents
- Antigen-antibody reactions
  - BT Immunity
- Antimuscarinic agents
  - U Parasympatholytics
- Antirex
  - U Edrophonium chloride
- Apnea
  - RT Respiration
- Apocrine glands
  - BT Sweat glands
- Arm
  - NT Forearm
- Armin 546-71-4
  - BT Organophosphorus compounds
  - UF Armine
  - UF Ethoxy-4-nitrophenyloxy-ethylphosphynoxide
  - UF Ethyl p-nitrophenyl ethylphosphonate
  - UF Phosphonic acid, ethyl-, ethyl 4-nitrophenyl ester
- Armine
  - U Armin
- Arpenal 3098-65-5
  - UF Benzeneacetic acid, alpha-phenyl, 3 (diethylamino)propyl ester, hydrochloride
  - UF N-(3-Diethylaminopropyl)-2-2 diphenylacetamide
  - UF Diphenylacetic acid diethylaminopropylamide
  - UF 1-Propanol, 3-(diethylamino)-, diphenylacetate, hydrochloride
- Arterenol
  - U Norepinephrine
- Arterial blood pressure
  - U Blood pressure
- Arteries
  - Where indicated use names of specific arteries
  - BT Blood vessels

Artificial respiration  
    U Respiration, artificial  
Artificial ventilation  
    U Respiration, artificial  
Aspiration  
    BT Respiration  
ATEE  
    U N-Acetyl-L-tyrosine ethyl ester  
Atmosphere  
ATP  
    U Adenosine triphosphate  
ATPase  
    U Adenosine triphosphatase  
Atrioventricular block  
    U Heart block  
Atrioventricular node  
Atropine 51-55-8  
    BT Parasympathomimetics  
    UF Hyoscyamine  
Atropine methyl bromide  
    U Methylatropine bromide  
Atropine sulfate 55-48-1  
Autonomic fibers  
    BT Neurons  
Autonomic nervous system  
    BT Nervous system  
Autoradiography  
    UF Radioautography  
Axons  
    BT Nerve fibers  
    BT Neurons  
Axoplasm  
Azinphosmethyl 86-50-0  
    BT Insecticides, organothiophosphate  
Azinphos-methyl  
    U Guthion  
8-Azoniabicyclo [3.2.1] octane, 3-(3-hydroxy-1-oxo-2-phenylpropoxy)-8,8-  
    dimethyl-, endo-, nitrate  
    U Methylatropine nitrate  
8-Azoniabicyclo [3.2.1] octane, 3-(3-hydroxy-1-oxo-2-phenylpropoxy)-8,8-  
    dimethyl-, bromide, endo-  
    U Methylatropine bromide  
B4FPBOCl<sub>2</sub>  
    UF 1,3-bis(4-formylpyridinium-propane)bis-oxime dichloride  
Back  
Barbital 57-44-3  
    BT Barbiturates  
    UF Barbitone  
    UF 2,4,6 (1H,3H,5H)-pyrimidinetrione, 5,5-diethyl-  
    UF Veronal



## Barbital phosphates

## Barbitone

U Barbital

## Barbiturates

BT Hypnotics and Sedatives

NT Barbital

## Bases

RT Acids

## Beak (chicken)

Benactyzine 302-40-9

BT Benzilates

BT Parasympatholytics

UF Benzeneacetic acid, alpha-hydroxy-alpha-phenyl-, esters, 2-(diethylamino)  
ethyl ether

UF 2-Diethylaminoethylbenzylate hydrochloride

## Bensylt

U Dibenzyline

## Benzalin

U Nitrazepam

Benzenaminium, 3-[(diethoxy-phosphinyl)-oxy]-N,N,N-trimethyl-, methyl sulfate

U Ro-3-0340

Benzenaminium, 3-[[[(dimethylamino) carbonyl]oxy]-N,N,N-trimethyl-

U Neostigmine

Benzenaminium, N-ethyl-3-hydroxy-N,N-dimethyl-, chloride

U Tensilon

Benzeneacetic acid, alpha-hydroxy- alpha-phenyl-, esters, 1-azabicyclo [2.2.2]  
oct-3-yl ester

U Ro-2-3308

Benzeneacetic acid, alpha-hydroxy-alpha-phenyl-, esters, 2-(diethylamino) ethyl  
ether

U Benactyzine

Benzeneacetic acid, alpha-hydroxy-alpha-phenyl esters, 1-methyl-3-piperidinyl  
ester

U JB-336

Benzeneacetic acid, alpha-hydroxy-alpha-phenyl-, esters, 1-methyl-4-  
piperidinyl ester, hydrochloride

U JB-336/4

Benzeneacetic acid, alpha-hydroxy-alpha-phenyl-, esters, 1-methyl-3-piperidinyl  
ester, hydrochloride

U JB 336/3

Benzeneacetic acid, alpha-phenyl-, 2-(diethylamino)ethyl ester  
     U Adiphenine  
 Benzeneacetic acid, alpha-phenyl-, 2-(diethylamino) ethyl ester  
     U Trasentine  
 Benzeneacetic acid, alpha-phenyl, 3(diethylamino)propyl ester, hydrochloride  
     U Arpenal  
 Benzenaminium, N-ethyl-3-hydroxy-N,N-dimethyl-  
     U Edrophonium  
 Benzenemethanamine, N-(2-chloroethyl)-N-(1-methyl-2-phenoxyethyl)-  
     U Dibenzylamine  
 Benzene, methyl-  
     U Toluene  
 Benzenesulfonyl fluoride  
 Benzilates  
     NT Benactyzine  
 Benzin 8030-03-06  
     NT Naphtha  
     NT Petroleum ether  
 Benzodiazepines  
 2H-1,4-Benzodiazepin-2-one, 7-chloro-1,3-dihydro-1-methyl-5-phenyl-  
     U Diazepam  
 2H-1,4-Benzodiazepin-2-one, 7-chloro-1,3-dihydro-1-methyl-5-phenyl-  
     U Valium  
 2H-1,4-Benzodiazepin-2-one, 1,3-dihydro-7-nitro-5-phenyl-  
     U Nitrazepam  
 Benzoic acid, 4-amino, 2-(diethylamino) ethyl ester  
     U Procaine  
 Benzoic acid, 3-chloro-2,5,6-trimethyl-  
     UF U-23223  
 Benzoic acid, esters  
 Benzoic acid, 4-(2-methylpropoxy)-3-(diethylamino)1,2-dimethylpropyl ester  
     hydrochloride  
     U Gangleron  
 Benzoylcholine 2208-04-0 2964-09-2  
     BT Choline

Benzoylcholine (cont'd)  
    UF Choline benzoate  
    UF Choline, benzoyl  
    UF Ethanaminium, 2--(benzoyloxy)-N,N,N-trimethyl-  
Benzoylcholinesterase  
    U Cholinesterase  
Benzylt  
    U Dibenzylt  
Bicyclo [2.2.1]heptan-2-amine, N,2,3,3-tetramethyl-  
    U Mecamylamine  
Binding, competitive  
    UF Competitive binding  
Binding sites  
Bladder  
    BT Urinary tract  
Blockage  
Blood  
Blood brain barrier  
    RT Cerebrospinal fluid  
Blood cell count  
    BT Cell count  
Blood cells  
    BT Cells  
    NT Blood platelets  
    NT Erythrocytes  
    NT Hemocytes  
    NT Leukocytes  
Blood circulation  
    RT Ischemia  
    UF Circulation  
Blood coagulation  
Blood flow velocity  
Blood glucose  
    RT Hyperglycemia  
Blood levels  
Blood plasma  
    U Plasma  
Blood platelets  
    BT Blood cells  
Blood pressure  
    RT Pressure  
        UF Arterial blood pressure  
Blood pressure determination  
Blood pressure, high  
    U Hypertension  
Blood pressure, low  
    U Hypotension  
Blood pressure, venous  
    U Venous pressure

## Blood transfusion

Blood transfusion  
UF Transfusion  
Blood vessels  
NT Arteries  
NT Veins  
Body temperature  
RT Fever  
RT Temperature  
RT Thermography  
RT Thermometers  
Body temperature changes  
Body temperature regulation  
UF Heat loss  
UF Heat production  
UF Thermoregulation  
Body weight  
RT Weight gain  
RT Weight loss

## Bone and Bones

Names of specific bones are used where indicated

Bone marrow  
UF Marrow  
Bone marrow cells  
BT Cells  
Borates  
Botulin  
U Botulinum toxins  
Botulinum toxins  
RT Botulism  
UF Botulin  
Botulism  
RT Botulinum toxins  
Bovine serum albumin  
U Serum albumin, bovine  
Brachial plexus  
Bradycardia  
Brain  
UF Cerebrum  
Brain stem  
Breast  
Breathing  
NT Inhalation  
Bromine cyanide  
U Cyanogen bromide  
Bromophos  
BT Insecticides, organothiophosphate  
Bronchi  
BT Lung  
Bronchial arteries  
Bronchial spasm  
UF Bronchospasm

## Bronchodilation

## Bronchodilator agents

## Buffers

BT Acid-base equilibrium

## Bursine

U Choline

Butanedioic acid [(dimethoxyphosphinothioyl) thio]-, diethyl ester

U Malathion

2,3-Butanedione, monooxime 57-71-6

UF DAM

UF Diacetyl monooxime

Butanoic acid, 4-amino

U GABA

Butanoic acid, anhydrides, anhydride

U Butyric anhydride

2-Butanol, 3,3-dimethyl-

U Pinacolyl alcohol

2-Butenoic acid, 3-[(dimethoxy-phosphinyl)oxy]-methyl ester

U Phosdrin

## Buttocks

Butyl dihydrogen phosphate 1623-15-0

UF Monobutylphosphoric acid

Butyl ether 142-96-1

Butyric anhydride 106-31-0

UF Butanoic acid, anhydrides, anhydride

Butyrylcholine iodide U Butyrylcholine iodide

Butyrylcholine 3922-86-9

Butyrylcholine bromide 18956-84-8

Butyrylcholine chloride 2963-78-2

Butyrylcholine iodide 2494-56-6

UF Butyrocholine iodide

Butyrylcholinesterase

U Cholinesterase

Butyrylthiocholine

BT Choline

Butyrylthiocholine iodide 1866-16-6

UF (2-Merceptoethyl)trimethylammonium iodide butyrate

Caffeine 58-08-2

Calcium 7440-70-2

Callithricidae

UF Marmosets

cAMP

U Adenosine 3'5'-cyclic monophosphate

Cannula

Cannulation

U Catheterization

Capillaries

Caramiphen 77-22-5

UF Cyclopentanecarboxylic acid, 1-phenyl-2(diethylamino) ethyl ester

## Caramiphen 77-22-5 (cont'd)

- UF Parpanil
- UF Pentaphen
- Caramiphen hydrochloride
  - U Caramiphen hydrochloride
- Caramiphen hydrochloride 125-85-9
  - BT Parasympathotics
  - UF 2-Diethylaminoethyl-L-phenyl cyclopentane carboxylate hydrochloride
  - UF Caramiphen hydrochloride
  - UF Caramiphenium chloride
  - UF G 2747
  - UF Parpanit
  - UF Pentaphene hydrochloride
- Caramiphenium chloride
  - U Caramiphen hydrochloride
- Carbachol 51-83-2
  - BT Parasympatholytics

- UF Carbacholine chloride
- UF Carbaminoylcholine chloride
- UF Carbamylcholine
- UF Choline carbamate chloride

## Carbacholine chloride

- U Carbachol

## Carbamates

## Carbamic acid, esters

Carbamic acid, esters, ethyl ester 51-79-6

- UF Ethyl carbamate

- UF Urethan

- UF Urethane

## Carbamide

- U Urea

## Carbaminocholine

- U Carbamoylcholine

## Carbaminoylcholine

- U Carbamoylcholine

## Carbaminoylcholine chloride

- U Carbachol

## Carbamoylcholine 462-58-8

- UF Carbaminocholine

- UF Carbaminoylcholine

## Carbamylcholine

- U Carbachol

## Carbaryl

- U N-Methyl carbamate

## Carbohydrate metabolism

## Carbon 7440-44-0

## Carbon dioxide 124-38-9

## Carbonic acid, monosodium salt

## Carbonic acid, monosodium salt (cont'd)

- U Sodium bicarbonate
- Carbonic dichloride
  - U Phosgene
- Carbon tetrachloride poisoning 56-23-5
- Carbonyl chloride
  - U Phosgene
- Carbonyl compounds
- Carbonyldiamide
  - U Urea
- Carboxylic acids, esters
- 3-Carboxypyridine N-oxide
  - U Oxiniacac acid
- Cardiac arrest
  - U Heart arrest
- Cardiac depressants
  - U Anti-arrhythmia agents
- Cardiac output
- Cardiovascular agents
- Cardiovascular diseases
- Cardiovascular homeostasis
- Cardiovascular system
- Cardiovascular system physiology
- Carnitine 541-15-1
  - U Acetylcarnitine
- Carnitine Acetyl Ester
- Carotid arteries
- Carotid body
- Catalysis
- Catheterization
  - UF Cannulation
- Cathode ray oscilloscope
  - U Oscilloscope
- Cations
- Cats
  - BT Laboratory animals
  - BT Mammals
- Caudate nucleus
- CDP-Choline
  - U Cytidine 5'-diphosphate choline
- CEES
  - U 2-Chloroethyl ethyl sulfide
- Cell count
  - BT Cells
  - NT Blood cell count
  - NT Cell wall
- Cell division
- Cell membrane

## Cell membrane (cont'd)

RT Membrane potentials

RT Membranes

UF Plasma membrane

## Cell membrane permeability

UF Permeability, cell membrane

## Cell nucleus

BT Cells

## Cells

Names of specific cells are used where indicated.

NT Blood cells

NT Bone marrow cells

NT Cell count

NT Cell nucleus

NT Cytoplasm

NT Epithelial cells

## Cells, cultured

## Cell wall

BT Cell count

## Central nervous system

BT Nervous system

## Centrum medianum

## Cerebellar cortex

## Cerebellum

## Cerebral blood flow

## Cerebral cortex

## Cerebral hemorrhage

UF Hemorrhage, cerebral

## Cerebrospinal fluid

RT Blood brain barrier

## Cerebrum

U Brain

## Cevadine 62-59-0

UF Cevane-3,4,12,14,16,17,20-heptol,4,9-epoxy-,3-(2-methyl-2-butenate)

UF Veratrine

## Cevane-3,4,12,14,16,17,20-heptol,4,9-epoxy-,3-(2-methyl-2-butenate)

U Cevadine

## cGMP

U Guanosine 3',5'-cyclic monophosphate

## Chemoreceptors

## Chickens

## Chloralose 15879-93-3 693-07-2

## Chlorfenvinphos

BT Insecticides, organophosphate

## Chlorine cyanide

U Cyanogen chloride

## N-Chloroacetyl-L-tyrosine ethyl ester

U Acetyl-L-tyrosine ethyl ester

## 2-Chloroethyl ethyl sulfide 693-07-2

UF CEES



## 2-Chloroethyl ethyl sulfide 693-07-2 (cont'd)

- UF Ethyl 2-chloroethyl sulfide
- Bis(2-chloroethyl) sulfide
  - U 2,2'-Dichloroethyl sulfide
- Bis(beta-chloroethyl) sulfide
  - U 2,2'-Dichloroethyl sulfide
- Chloroform 67-66-3
- Chloromercuribenzoates
- 2-Chloropromazine
  - U Chlorpromazine
- Chlorpromazine 50-53-3
  - UF 2-Chloropromazine
  - UF CPZ
  - UF Promazil
  - UF Thorazine
- Choline 62-49-7
  - NT Acetylthiocholine
  - NT Benzoylcholine
  - NT Butyrylthiocholine
  - NT Phosphorylcholine
  - NT Thiocholine
  - NT Triethylcholine
  - UF Bursine
  - UF Ethanaminium, 2-hydroxy-N,N,N-trimethyl-
  - UF Vidine
- #3H-Choline
- Choline acetylase
  - U Acetyltransferase, choline
- Choline acetyltransferase
  - U Acetyltransferase, choline
- Choline benzoate
  - U Benzoylcholine
- Choline, benzoyl
  - U Benzoylcholine
- Choline bromide 306-41-2
- Choline carbamate chloride
  - U Cartachol
- Choline chloride 67-48-1
- Choline Cytidine 5'-pyrophosphate
  - U Cytidine 5'-diphosphate choline

- Choline phosphate chloride
  - U Phosphorylcholine
- Choline phosphoglycerides
  - U Phosphatidylcholines
- Cholinergic agents
  - U Parasympathomimetics
- Cholinergic blocking agents
  - U Parasympatholytics
- Cholinergic receptors

## Cholinergic receptors (cont'd)

- U Receptors, cholinergic
- Cholinesterase 9001-08-5
  - BT Esterases
  - UF Benzoylcholinesterase
  - UF Butyrylcholinesterase
  - UF Esterase, choline
  - UF Propionylcholinesterase
  - UF Pseudocholinesterase
- Cholinesterase activity
- Cholinesterase inhibitors
  - NT Ambenonium chloride
  - NT Amiton
  - NT Cholinesterase inhibitors, irreversible
  - NT Cholinesterase inhibitors, reversible
  - RT Insecticides
  - UF Anticholinesterase activity
  - UF Anticholinesterase agents
- Cholinesterase inhibitors, irreversible
  - BT Cholinesterase inhibitors
- Cholinesterase inhibitors, reversible
  - BT Cholinesterase inhibitors
- Cholinesterase Reactivators
- Cholinesterases
  - NT AChE
- Cholinoceptive sites
  - U Receptors, cholinergic
- Cholinoceptors
  - U Receptors, cholinergic
- Cholinolytics
  - U Parasympatholytics
- Cholinomimetics
  - U Parasympathomimetics
- Chondrosamine
  - U Galactosamine
- Chondrosamine hydrochloride
  - U Galactosamine hydrochloride
- Choroid plexus
- Chromatography
  - Chromatography, column and liquid
  - Chromatography, gas
    - UF Gas chromatography
  - Chromatography, gel
    - UF Gel chromatography
  - Chromatography, paper
    - UF Paper chromatography
  - Chromatography, thin-layer
    - UF Thin-layer chromatography
- Chymar
  - U Alpha-Chymotrypsin
- Alpha-Chymotrypsin 8049-46-5 9004-07-3 9025-29-0

Alpha-Chymotrypsin 8049-46-5 9004-07-3 9025-29-0

(cont'd)

BT Peptide hydrolases

UF Chymar

UF Chymotrypsin-A

Chymotrypsin-A

U Alpha-Chymotrypsin

Cinchocain

U Dibucaine

Cinchocaine

U Dibucaine

Cinchocaine hydrochloride 61-12-1

Circadian rhythm

RT Periodicity

Circulation

U Blood circulation

Citicholine

U Cytidine 5'-diphosphate choline

Clonazepam 1622-61-3

Cloning

Cocaine 50-36-2

Cold

RT Hypothermia

Color

Colorimetry

Competitive binding

U Binding, competitive

Constriction

Contracture

Convulsions

Cordycepin 73-03-0

Cosmegen

U Actinomycin D

Coumaphos

BT Insecticides, organothiophosphate

CPZ

U Chlorpromazine

Creatinine 60-27-5

CRO

U Oscilloscope

Cruformate

BT Insecticides, organophosphate

Crustacea

CTP

U Cytidine 5'-triphosphate

Culture media

Curare 8063-06-7

Cyanides

Inorganic cyanides are indexed at Cyanides; organic cyanides, at Nitriles.

Cyanogen bromide 506-68-3

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Cyanogen bromide 506-68-3

UF Bromine cyanide

Cyanogen chloride 506-77-4

UF Chlorine cyanide

Cyanogen iodide 506-78-5

UF Iodine monocyanoide

Cyanogen fluoride 1495-50-7

UF Fluorine cyanide

Cyanomethane

U Acetonitrile

Cyanosis

Cyclase, adenylate

U Adenylate cyclase

Cyclic AMP

U Adenosine 3',5'-cyclic monophosphate

Cyclic AMP-N6,2'-O-dibutyrate

U Dibutyryl cyclic AMP

Cyclic GMP

U Guanosine 3',5'-cyclic monophosphate

Cyclic nucleotide phosphodiesterases

BT Phosphodiesterases

Cyclic nucleotides

U Nucleotides, cyclic

Cyclohexane 110-82-7

UF Hexamethylene

Cyclohexanone, 2-(2-chlorophenyl)-2-(methylamino)-

U Ketamine

5-Cyclohexenyl-3,5-dimethylbarbituric acid

U Hexobarbital

Cycloheximide 66-81-9

Cyclonal

U Hexobarbital

Cyclonal sodium

U Hexobarbital sodium

Cyclopentanecarboxylic acid, 1-phenyl-2

(diethylamino)ethyl ester

U Caramiphen

Cymography

U Kymography

Cytidine 65-46-3

UF 4-Amino-1-beta-D-ribofuranosyl-2-(1H)  
pyrimidinone

UF Cytosine riboside

Cytidine choline diphosphate

U Cytidine 5'-diphosphate choline

Cytidine cyclic monophosphate

BT Cytosine nucleotides

Cytidine diphosphate

Cytidine diphosphate (cont'd)

BT Cytosine nucleotides

Cytidine diphosphate choline

U Cytidine 5'-diphosphate choline

Cytidine 5'-diphosphate choline 987-78-0

UF CDP-Choline

UF Choline Cytidine 5'-pyrophosphate

UF Citicholine

UF Cytidine choline diphosphate

UF Cytidine diphosphate choline

Cytidine 5'-diphosphate choline, monosodium salt  
33818-15-4

Cytidine monophosphate

BT Cytosine nucleotides

Cytidine triphosphate

BT Cytosine nucleotides

Cytidine 5'-triphosphate 65-47-4

UF CTP

Cytidine phosphates

U Cytosine nucleotides

Cytoplasm

BT Cells

Cytosine nucleotides

NT Cytidine cyclic monophosphate

NT Cytidine diphosphate

NT Cytidine monophosphate

NT Cytidine triphosphate

UF Cytidine phosphates

Cytosine riboside

U Cytidine

Dactinomycin

U Actinomycin D

DAM

U 2,3-Butanedione, monooxime

DDVP 62-73-7

UF 2,2-Dichlorovinyl dimethyl phosphate

UF Dichlorvos

UF Dimethyl-alpha,2-dichlorovinyl phosphate

UF O,O-Dimethyl-O-(2,2-dichlorovinyl phosphate

UF Phosphoric acid, esters, 2,2-dichloroethenyl  
dimethyl ester

Dealkylation

Death

Death rate

U Mortality

Decamethonium 156-74-1

Defoliant, chemical

U Herbicides

## Deformities

BT Abnormalities

## Delacurarine

U d-Tubocurarine chloride

Demeton 8065-48-3

## Dendrites

BT Neurons

## Denervation

(1-(2-deoxy-beta-D-erythropentofuranosyl)-5-methyl-2,4(1H,3H)-pyrimidinedione)

U Thymidine

1-(2-Deoxy-beta-D-ribofuranosyl)-5-methyluracil

U Thymidine

## Deoxyribonucleic acid

UF DNA

## Dephosphorylation

## Depolarization

## Depression

## Dermal absorption

U Skin absorption

## Detoxification

## Dextrose

U Glucose

## DFF

U DFP (Pesticide)

DFP (Pesticide) 55-91-4

UF DFF

UF Difluorophate

UF Diisopropoxyphosphoryl fluoride

UF Diisopropyl fluorophosphate

UF Dyflos

UF Fluorodiisopropyl phosphate

UF Isofluorophate

UF Phosphorofluoridic acid, bis (1-methylethyl) ester

## Diacetyl monoxime

U 2,3-Butanedione, monooxime

Diamethazole hydrochloride 17140-69-1

Diamethazole dihydrochloride 136-96-9

## Diaphragm

## Diathermy

RT Microwaves

Diazepam 439-14-5

UF Valium

UF 2H-1,4-Benzodiazepin-2-one, 7-chloro-1,3-dihydro-1-methyl-5-phenyl-

Diazinon 333-41-5

BT Insecticides, organothiophosphate

UF Phosphorothioic acid, O,O-diethyl O-(2-isopropyl-6-methyl-4-pyrimidinyl) ester

Dibenylene  
U Dibenzylene  
Dibenzylene 59-96-1  
UF Bensylt  
UF Benzenemethanamine, N-(2-chloroethyl)-N-(1-methyl  
2-phenoxyethyl)-  
UF Bensylt  
UF Dibenylene  
UF Phenoxybenzamine  
Dibenzylene hydrochloride 63-92-3  
UF Dibenzylene chloride  
UF Phenoxybenzamine chloride  
UF Phenoxybenzamine hydrochloride  
Dibucaine 85-79-0  
UFCinchocaine  
UF Cinchocain  
Dibucaine hydrochloride 61-12-1  
Dibutyl 2,2-dichloroethenyl phosphate  
U 2,2-Dichlorovinyl dibutylphosphate  
Dibutyl 2,2-dichlorovinyl phosphate  
U 2,2-Dichlorovinyl dibutylphosphate  
Dibutyryl adenosine-3',5'-monophosphate  
U Dibutyryl cyclic AMP  
Dibutyryl cyclic adenosine monophosphate  
U Dibutyryl cyclic AMP  
Dibutyryl cyclic AMP 362-74-3  
UF Adenosine, N-(1-oxobutyl)-, cyclic 3',5'  
(hydrogen phosphate) 2'-butanoate  
UF Cyclic AMP-N6,2'-O-dibutyrate  
UF Dibutyryl 3',5'-cyclic AMP  
UF Dibutyryl adenosine-3',5'-monophosphate  
UF Dibutyryl cyclic adenosine monophosphate  
Dibutyryl 3',5'-cyclic AMP  
U Dibutyryl cyclic AMP  
2,2-Dichloroethenyl diethyl phosphate  
U 2,2-dichlorovinyl diethyl phosphate  
2,2-Dichloroethenyl dipropyl phosphate  
U 2,2-Dichlorovinyl dipropyl phosphate  
Di-2-chloroethyl sulfide  
U 2,2'-Dichloroethyl sulfide  
2,2'-Dichloroethyl sulfide 505-60-2  
UF Mustard gas  
UF Bis(2-chloroethyl) sulfide  
UF Bis(beta-chloroethyl) sulfide  
UF Di-2-chloroethyl sulfide  
2,4-Dichlorophenyl methyl methylphosphonate  
2,2-Dichlorovinyl dibutylphosphate 18795-58-9  
UF Dibutyl 2,2-dichloroethenyl phosphate  
UF Dibutyl 2,2-dichlorovinyl phosphate  
2,2-dichlorovinyl diethyl phosphate 72-00-4  
UF 2,2-Dichloroethenyl diethyl phosphate  
UF Ethyl DDVF

2,2-Dichlorovinyl diethyl phosphate 72-00-4 (cont'd)  
UF SD 1652  
2,2-Dichlorovinyl dimethyl phosphate  
U DDVP  
2,2-Dichlorovinyl Di-N-pentyl phosphate 20202-93-1  
2,2-Dichlorovinyl diphenyl phosphate  
2,2-Dichlorovinyl dipropyl phosphate 71-98-7  
UF 2,2-Dichloroethenyl dipropyl phosphate  
2,2-Dichlorovinyl methyl pentyl phosphate 34622-69-0  
Dichlorvos  
U DDVP  
Diethylaminoacetyl-N-phenothiazine hydrochloride  
U Difazin  
2-Diethylaminoethylbenzylate hydrochloride  
U Benactyzine  
2-Diethylaminoethyl diphenyl acetate hydrochloride  
U Trazentine  
2-Diethylaminoethyl-L-phenyl cyclopentane carboxylate hydrochloride  
U Caramiphen hydrochloride  
N-(3-Diethylaminopropyl)-2-2-diphenylacetamide  
U Arpenal  
3-Diethylaminopropyl oximinoacetate 25057-76-6  
UF OAB  
1,4-Diethylene dioxide  
U Dioxane  
Diethyl-p-nitrophenyl phosphate  
U Paraoxon  
Diethyl p-nitrophenyl phosphorothionate  
U Parathion  
Diethyl p-nitrophenylthionophosphate  
U Parathion  
Diethyl p-nitrophenylthiophosphate  
U Parathion  
Diethylphosphorylfluoride  
Diethyl-S-2-diethylaminoethyl phosphorothioate



O, O-Diethyl S-2-diethylaminoethyl phosphorothioate  
     U Armiton  
 Difacil hydrochloride  
     U Trasentine hydrochloride  
 Difazin 641-33-8  
     UF 10H-Phenothiazine, 10 [(diethylamino)-acetyl]  
     UF Diethylaminoacetyl-N-phenothiazine hydrochloride  
 Difluorophate  
     U DFP (Pesticide)  
 Difonate  
     BT Insecticides, organothiophosphate  
 Digestive system  
 1,3-Dihydro-7-nitro-5-phenyl-2H-1,4-benzodiazepin-2-one  
     U Nitrazepam  
 7',12'-Dihydroxy-6,6'-dimethoxy-2,2',2'-trimethyltubocuraranium chloride  
     U d-Tubocurarine chloride  
 Dihydroxyphenylalanine  
     U DOPA  
 Diisopropoxyphosphoryl fluoride  
     U DFP (Pesticide)  
 Diisopropyl fluorophosphate  
     U DFP (Pesticide)  
 N,N'-Diisopropylphosphorodiamidic anhydride  
     U DPDA  
 N,N'-Diisopropylphosphorodiamidic fluoride  
     U Mipafox  
 Diisopropylphosphorofluoridase  
     U Tabunase  
 Diisopropyl phosphorofluoridate  
     U Isofluorophate  
 Dibenzyl chloride  
     U Dibenzyl hydrochloride  
 Dimefox 115-26-4  
     UF Phosphorodiamide fluoride, tetramethyl-  
 1,1-Dimethyl-4-phenylpiperazinium iodide  
     U DMPP  
 Dimethoate 60-51-5  
     UF Phosphamide  
     UF Phosphorodithionic acid, esters, O,O-dimethyl S-[2-(methylamino)-2-oxoethyl] ester  
 Dimethoxy p-nitrophenoxyphosphine oxide

Dimethoxy p-nitrophenoxyphosphine oxide

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Dimethoxy p-nitrophenoxyphosphine oxide (cont'd)

U DMPA

3,4-Dimethoxy-L-phenylalanine

U DMPA

Dimethylamidoethoxyphosphoryl cyanide

U Tabun

Dimethylamine 124-40-3

UF Methanamine, N-methyl-

3-(2-Dimethyl-aminoethyl) phenyl-N-methylcarbamate

2,3-Dimethyl-2-butanol 594-60-5

UF Isopropyldimethylcarbinol

3,3-Dimethyl-2-butyl-methyl-phosphonofluoridate

U Soman

Dimethyl carbamate 39589-98-5

1,5-Dimethyl-5-(1-cyclohexenyl) barbituric acid

U Hexobarbital

O,O-Dimethyl-O-(2,2-dichlorovinyl) phosphate

U DDVP

Dimethyl-alpha,2-dichlorovinyl phosphate

U DDVP

1,2-Dimethyl-3-diethylaminopropyl p-isobutoxybenzoate

U Gangleron

N,N-Dimethylformamide 68-12-2

UF DMF

UF DMFA

UF Formamide, N,N-dimethyl-

1,1-Dimethyl-2-phenylaziridinium

UF DPA

Dimethylphenylpiperazinium

U DMPP

N-Dimethylphosphoramidocyanidate

U Tabun

Dimethylphosphoramidocyanidic acid, ethyl ester

U Tabun

Dimethylphosphorylfluoride

Dimethyl sulfoxide 67-68-5

UF DMSO

Dimethyltubocurarine

U Dimethyl-D-tubocurarine

Dimethyl-D-tubocurarine 35-67-6

UF Dimethyltubocurarine

Dimethyl-D-tubocurarine chloride 518-25-2

UF Dimethylturocurarine chloride

Dimethyl tubocurarine iodide 518-26-3 7601-55-0

UF Metocurine iodide

Dimethylturocurarine chloride

U Dimethyl-D-tubocurarine chloride

Dimetilan 644-64-4

Dimetilan 644-64-4 (cont'd)  
UF Dimetilane  
Dimetilane  
U Dimetilan  
Dimethylphenylpiperazinium iodide  
U DMPP  
Dina 4185-47-1  
UF Ethanol, 2,2'-(nitroimino)bis-, dinitrate (ester)  
Dinitrogen monoxide  
U Nitrous oxide  
2,4-Dinitrophenol 51-28-5  
Dioisopropylphosphoric acid  
Diophenylacetic acid diethylaminopropylamide  
U Arpenal  
Dioxane 123-91-1  
UF 1,4-Diethylene dioxide  
Dioximes  
UF Oximes, di-  
  
Diphosphoramidate, octamethyl-  
U Octamethyl pyrophosphoramidate  
Diphosphoric acid tetraethyl ester  
U Tetraethyl pyrophosphate  
Dipterex  
U Trichlorfon  
Disodium thiosulfate  
U Sodium thiosulfate  
Disulfoton  
BT Insecticides, organothiophosphate  
Dithionates  
DMF  
U N,N-Dimethylformamide  
DMFA  
U N,N-Dimethylformamide  
DMPA 32161-30-1  
UF Dimethoxy p-nitrophenoxyphosphine oxide  
UF 3,4-Dimethoxy-L-phenylalanine  
DMPA (herbicide) 299-85-4  
UF Phosphoramidothioic acid, (1-methylethyl)-O-(2,4-dichlorophenyl)-O-methyl ester  
UF Zytron  
DMPP 54-77-3  
BT Piperazines  
UF 1,1-Dimethyl-4-phenylpiperazinium iodide  
UF Dimethylphenylpiperazinium  
UF Dimethylphenylpiperazinium iodide  
UF Piperazinium, 1,1-dimethyl-4-phenyl-, iodide  
DMSO  
U Dimethyl sulfoxide  
DNA  
U Deoxyribonucleic acid

## Dogs

BT Laboratory animals

BT Mammals

DOPA 59-92-7

UF Dihydroxyphenylalanine

Dorsal muscles

Dosage forms

Dose-response relationship

RT Immunity

Doxapram 309-29-5

DPA

U 1,1-Dimethyl-2-phenylaziridinium

DFNA 513-00-8

UF N-N'-Diisopropylphosphorodiamidic anhydride

UF tetraisopropyl pyrophosphoramidate

Drug therapy

DSDP

U Amiton

Dyes

Dyflos

U DFP (Pesticide)

Dyspnea

E-600

U Paraoxon

Ear

BT Sense organs

Eccrine glands

BT Sweat glands

Echothiophate iodide 513-10-0

UF Echothiophate iodide

UF Phospholine iodide

Echothiophate 6736-03-4

UF Echothiophate

UF MI-217

UF Phospholine

Echothiophate

U Echothiophate

Echothiophate iodide

U Echothiophate iodide

Edem

UF O-Ethyl-S-(2-diethylaminoethyl)methyl  
thiophosphonate

Edetic acid

U EDTA

Edrophone bromide

U Edrophonium bromide

Edrophonium 312-48-1

UF Benzenaminium, N-ethyl-3-hydroxy-N,N-dimethyl-

Edrophonium bromide 302-83-0

## Edrophonium bromide 302-83-0 (cont'd)

- UF Edrophone bromide
- UF Ethyl(m-hydroxyphenyl)dimethylammonium bromide
- UF N-Ethyl-3-hydroxy-N,N-dimethylbenzenaminium bromide
- UF Tensilon bromide
- Edrophonium chloride 116-38-1
  - UF Antirex
  - UF Tensilon chloride
- EDTA 60-00-4 64-02-8
  - UF Edetic acid
  - UF Ethylenediaminetetraacetic acid
- Eel
- Electric stimulation
  - UF Stimulation, electric
- Electrodes
- Electrodes, implanted
- Electrophoresis
- Embryo
- Enantiomerism and Enantiomers
  - U Isomerism and Isomers, optical
- Endocid
  - U Endothion
- Endocide
  - U Endothion
- Endocrine glands
  - NT Adrenal glands
  - NT Islands of Langerhans
  - NT Parathyroid glands
  - NT Pineal body
  - NT Pituitary gland
  - NT Pituitary-adrenal system
  - NT Thyroid gland
- Endocrine system
- Endothion 2778-04-3
  - UF Endocid
  - UF Endocide
- Endplate
- Enzymatic phosphorylation
- Enzyme activation
- Enzyme inhibitors
- Enzyme reactivators
- Enzyme repression
- Enzymes
- Epinephrine 51-43-4
  - UF Adrenaline
- Epithelial cells
  - BT Cells
- Epithelium
- EPN 2104-64-5
  - BT Insecticides, organothiophosphate
  - UF Phosphonothioic acid, phenyl-O-ethyl O-(4-nitrophenyl)ester

Equilibrium

## Ergamine

U Histamine

Ergoline-8-carboxamide, 9,10-didehydro-N,N-diethyl-6-methyl-, (8B)-

U LSD

## Ergotidine

U Histamine

## Erythroblasts

BT Erythrocytes

## Erythrocytes

BT Blood cells

NT Erythroblasts

RT Reticulocytes

UF Red blood cells

## Erythrocyte volume, packed

U Hematocrit

## Erythropoiesis

Erythropoietin 11096-26-7

BT Glycoproteins

## Eserine

U Physostigmine

Esterase, carboxyl 9016-18-6

BT Esterases

UF Aliesterase

## Esterase, choline

U Cholinesterase

## Esterases

BT Hydrolases

NT Cholinesterase

NT Esterase, carboxyl

## Esters

Ethanaminium, 2-(acetyloxy)-N,N,N-trimethyl-

U Acetylcholine

Ethanaminium, 2-(benzoyloxy)-1, N,N,N-trimethyl-

U Benzoylcholine

Ethanaminium, 2-hydroxy-N,N,N-trimethyl-

U Choline

Ethanaminium 2-(benzoyloxy)-N,N,N-trimethyl-

U Benzoylcholine

Ethanaminium, 2-mercapto-N,N,N-trimethyl-

U Thiocholine

Ethanol 64-17-5

UF Alcohol, ethyl

Ethanol, 2,2'-(nitroimino)bis-, dinitrate (ester)

U Dina

## Ethion

BT Insecticides, organothiophosphate

Ethoxy-2-dimethylamino-ethylthiomethyl-phosphine oxide  
U Medemo  
Ethoxy-2-ethylthioethyl-thiomethyl-phosphine oxide  
U GD-7  
Ethoxy-2-ethylthioethyl-thiomethyl-phosphine oxide  
methylsulfomethylate  
U GD-42  
Ethoxy group  
(2-((Ethoxymethylphosphinyl)thio)ethyl)ethylmethyl  
sulfonium methyl sulfate  
U GD-42  
Ethoxy-4-nitrophenyloxy-ethylphosphynoxide  
U Armin  
Ethyl acetyltyrosinate  
U N-Acetyl-L-tyrosine ethyl ester  
Ethyl N-acetyl-L-tyrosinate  
U Acetyl-L-tyrosine ethyl ester  
N-Ethyl-8-aza-3-bicyclo [3.2.1.]octyl benzhydryl ether  
U Ethylbenztropine  
Ethylbenztropine 524-83-4  
UF N-Ethyl-8-aza-3-bicyclo [3.2.1.]octyl benzhydryl  
ether  
UF N-Ethylbenztropine  
UF N-Ethylnorthropane benzhydrine ether  
hydrochloride  
UF Ponalid  
N-Ethylbenztropine  
U Ethylbenztropine  
Ethyl carbamate  
U Carbamic acid, esters, ethyl ester  
  
Ethyl 2-chloroethyl sulfide  
U 2-Chloroethyl ethyl sulfide  
Ethyl DDVP  
U 2,2-dichlorovinyl diethyl phosphate  
Ethyl dimethylamidocyanophosphate  
U Tabun  
Ethyl dimethylphosphoramidocyanidate  
U Tabun  
Ethyl N,N-dimethyl phosphoramido cyanidate  
U Tabun  
Ethylenediaminetetraacetic acid  
U EDTA  
Ethyl guthion 2642-71-9  
N-Ethyl-3-hydroxy-N,N-dimethylbenzenaminium bromide  
U Edrophonium bromide  
Ethyl methylphosphonothiothiolic acid  
Ethyl (m-hydroxyphenyl)dimethylammonium bromide  
U Edrophonium bromide  
Ethyl p-nitrophenyl ethylphosphonate  
U Armin  
Ethyl 4-nitrophenyl methylphosphonate 3735-98-6

N-Ethylnorthropane benzhydrine ether hydrochloride  
 U Ethylbenztropine  
 Ethyl paraoxon  
 U Paraoxon  
 Ethyl parathion  
 U Parathion  
 Ethyl phosphoric acid  
 U Phosphoric acid, esters, ethyl ester  
 N-Ethyl-2-pyrrolidylmethyl phenylcyclopentylglycolate  
 hydrochloride  
 U PMUG  
 O-Ethyl S-diethylaminoethyl ethylphosphonothiolate  
 21738-25-0  
 O-Ethyl, S-diethylaminoethyl-ethylphosphonothiolate  
 U AM-1  
 O-Ethyl-S-(2-diethylaminoethyl)methyl thiophosphonate  
 U Edem  
 O-Ethyl S-(2-diisopropylaminoethyl  
 methylphosphonothioate 50782-69-9  
 UF O-Ethyl S-(2-diisopropylaminoethyl)  
 methylthiophosphonate  
 O-Ethyl S-(2-diisopropylaminoethyl)  
 methylthiophosphonate  
 U O-Ethyl S-(2-diisopropylaminoethyl  
 methylphosphonothioate  
 Ethyl-S-(2-diisopropylaminoethyl) methylthiophosphonate  
 U VX  
 O-Ethyl S-(beta-ethylthioethyl) methylphosphonothioate  
 U GD-7

Exocrine glands  
 RT Pancreas

Experimental design  
 U Research design  
 Exposure, chambers, inhalation  
 U Inhalation chambers  
 Eye  
 BT Sense organs  
 Eyelids  
 RT Nictitating membrane

T  
A  
I



## Face

## Fasciculation

Involuntary contractions,, or twitchings, of groups  
of muscle fibers

## Fasciculus

## Fatty acids

## Fatty acids, unsaturated

## Femoral artery

## Femoral nerve

## Femoral vein

## Femur

## Fensulfotion

BT Insecticides, organothiophosphate

## Ferric chloride 7705-08-0

## Ferrohemoglobin

U Hemoglobins

## Fever

RT Body temperature

UF Hyperthermia

## Fibrillation

## Flexor

## Flowmeters

## Fluorescence

## Fluorides

Term used for fluorides as a class. Specific terms  
are used to index subclasses.

## Fluorine 7782-41-4

BT Halogens

## Fluorine cyanide

U Cyanogen fluoride

## Fluorodiisopropyl phosphate

U DFP (Pesticide)

## Fluoromethyl sulfone

U Methanesulfonic fluoride

## Fluoromethyl(1,2,2-trimethylpropoxy) phosphine oxide

U Soman

## Fluorometry

## Foot

## Forearm

BT Arm

## Forelimb

## Formaldehyde 50-00-0

## Formamide, N,N-dimethyl-

U N,N-Dimethylformamide

## Formothion

BT Insecticides, organothiophosphate

## 1,3-bis(4-formylpyridinium-propane)bis-oxime dichloride

U B4FPBOCl<sub>2</sub>

## Frogs

## G 2747

U Caramiphen hydrochloride

## GABA 56-12-2

UF Butanoic acid, 4-amino

GABA

GABA (cont'd)

UF gamma-aminobutyric acid

GABA-T

UF GABA transamininase

GABA transamininase

U GABA-T

GAD

UF Glutamic acid decarboxylase

Galactosamine 1948-54-5

UF Chondrosamine

UF Galactose, 2-amino-2-deoxy-

Galactosamine hydrochloride

UF Chondrosamine hydrochloride

Galactose, 2-amino-2-deoxy-

U Galactosamine

Gangleron 1510-29-8

UF 1,2-Dimethyl-3-diethylaminopropyl p-isobutoxybenzoate

UF Benzoic acid, 4-(2-methylpropoxy)-3-(diethylamino)-1,2-dimethylpropyl ester hydrochloride

UF Ganglerone

Ganglerone

U Gangleron

Ganglia

Ganglia, parasympathetic

UF Parasympathetic ganglia

Ganglia, spinal

BT Spinal nerve roots

Ganglia, sympathetic

UF Sympathetic ganglia

Ganglionic blockaders

UF Ganglionic blocking agents

UF Ganglioplegic agents

Ganglionic blocking agents

U Ganglionic blockaders

Ganglionic stimulants

UF Nicotinic agents

Ganglioplegic agents

U Ganglionic blockaders

Gas chromatography

U Chromatography, gas

Gastric emptying

Gastric probe

Gastrocnemius muscle

BT Muscles

Gastrointestinal hemorrhage

UF Hemorrhage, gastrointestinal

Gastrointestinal system

NT Intestines

NT Stomach

GD-42 2562-54-1  
     UF 2((Ethoxymethylphosphinyl)thio)ethyl ethylmethyl sulfonium methyl sulfate  
     UF Ethoxy-2-ethylthioethyl-thiomethyl-phosphin oxide methylsulfomethylate  
     UF Phosphonothioic acid, methyl-, O-ethyl ester  
     UF Sulfonium, [2-[(ethoxymethylphosphinyl)thio]ethyl]methyl-, methyl sulfate  
 GD-7 556-75-2  
     UF Ethoxy-2-ethylthioethyl-thiomethyl-phosphine oxide  
     UF O-Ethyl S-(beta-ethylthioethyl)methylphosphonothioate  
     UF Phosphonothioic acid, methyl-, O-ethyl S-[2(ethylthio)ethyl] ester  
 Geiger Counter  
     RT Radiometry  
     UF Geiger-Mueller Counter  
 Geiger-Mueller Counter  
     U Geiger Counter  
 Gel chromatography  
     U Chromatography, gel  
 Germ cells  
 Gills  
 Globus pallidus  
 Glucose 50-99-7  
     UF Dextrose  
     UF D-Glucose  
 D-Glucose  
     U Glucose  
 Glutamic acid 6899-05-4  
 DL-Glutamic acid 617-65-2  
 L-Glutamic acid 56-86-0  
 Glutamic acid decarboxylase  
     U GAD  
 Glutamic oxalacetic transaminase 9000-97-9  
     UF Aminotransferase, aspartate  
     UF GOT  
 Glycemia  
 Glycoproteins  
     NT Erythropoietin  
 GMP  
     U Guanosine monophosphate  
 3,5-GMP  
     U Guanosine 3',5'-cyclic monophosphate  
 GOT  
     U Glutamic oxalacetic transaminase  
 Growth  
 Growth inhibitors  
 G-Strophanthin  
     U Ouabain

Guanosine 3',5'-cyclic monophosphate 7665-99-8

UF 3,5-GMP

UF cGMP

UF Cyclic GMP

Guanosine monophosphate

UF GMP

Guinea pigs

BT Laboratory animals

BT Mammals

Gusathion M

U Guthion

Guthion 86-50-0

UF Azinphos-methyl

UF Gusathion M

Gyrus, frontalis superior

Gyrus, post centralis

Gyrus, precentralis

Hair

<sup>3</sup>H

U Tritium

Half-life

Halogens

NT Fluorine

Hamsters

BT Mammals

Hand

Hazards

Hb

U Hemoglobins

HC-3 312-45-8

UF Morpholinium, 2,2'-[1,1-biphenyl]-4,4'-diylbis [2  
hydroxy-4,4-dimethyl-, dibromide-

Head

Heart

Heart arrest

UF Cardiac arrest

Heart block

UF Atrioventricular block

Heart failure, congestive

Heart function tests

Heart rate

Heart ventricle

Heat

Heating

Heat loss

U Body temperature regulation

Heat production

U Body temperature regulation

Hematocrit

UF Erythrocyte volume, packed

Hemicholinium 16478-59-4

UF Morpholinium, 2,2'-[1,1'-biphenyl] 4,4'-diylbis  
[2-hydroxy-4,4-dimethyl-

Hemicholinium-3      312-45-8  
    UF Morpholinium, 2,2' [1,1'-biphenyl]4,4'-diylbis  
    [2-hydroxy-4,4-dimethyl-, dibromide  
Hemocytes  
    ST Blood cells  
Hemoglobins  
    UF Ferrohemoglobin  
    UF Hb  
Hemolysins  
    UF Hemotoxins  
Hemolysis  
Hemorrhage  
Hemorrhage, cerebral  
    U Cerebral hemorrhage  
Hemorrhage, gastrointestinal  
    U Gastrointestinal hemorrhage  
Hemotoxins  
    U Hemolysins  
Hens  
Heparin      9005-49-6  
    UF Heparinic acid  
Heparinic acid  
    U Heparin  
Herbicides  
    UF Defoliants, chemical  
Hering-Breuer Reflex  
Hexamethonium      60-26-4  
    UF 1,6-Hexanediaminium, N,N,N,N',N',N'-hexamethyl-  
Hexamethonium bromide      55-97-0  
Hexamethonium chloride      60-25-3  
Hexamethonium iodide      870-62-2  
    UF 1,6-Hexanediaminium, N,N,N,N',N',N'-hexamethyl-,  
    diiodide  
Hexamethylene      110-82-7  
    U Cyclohexane  
1,6-Hexanediaminium, N,N,N,N',N',N'-hexamethyl-  
    U Hexamethonium  
1,6-Hexanediaminium, N,N,N,N',N',N'-hexamethyl-,  
    diiodide  
    U Hexamethonium iodide  
Hexobarbital      56-29-1      630-97-7  
    UF 1,5-Dimethyl-5-(1-cyclohexenyl) barbituric acid  
    UF 5-Cyclohexenyl-3,5-dimethylbarbituric acid  
    UF Cyclonal  
    UF Hexobarbitone  
  
Hexobarbital sodium      50-09-9  
    UF Cyclonal sodium  
    UF Hexobarbital soluble  
    UF Hexobarbitone sodium  
    UF Sodium hexobarbital  
    UF Sodium hexobarbitone

Hexobarbital soluble

38

Hexobarbital soluble

U Hexobarbital sodium

Hexobarbitone

U Hexobarbital

Hexobarbitone sodium

U Hexobarbital sodium

Hexokinase

HI-6 34433-31-3

UF Pyridinium, 1-[[[4

aminocarbonylpyridinio]methoxymethyl] -2

[hydroxyimino)methyl]-dichloride

Hip

Hippocampus

Histamine 51-45-6

UF 1H-Imidazole-4-ethanamine

UF 2-(4-Imidazolyl)ethylamine

UF 4-Imidazoleethylamine

UF beta-Aminoethylglyoxaline

UF Ergamine

UF Ergotidine

UF Theramine

Histology

NT Histopathology

Histopathology

BT Histology

BT Pathology

HNB-3

U Quinuclidinyl benzilate hydrochloride

Homeostasis

Homogenates

Hormones

For studies of hormones as a class. For specific hormones, use specific terms.

Horse serum

HS-3 25487-36-9

UF Pyridinium, 2-[hydroxyimino)methyl]-1- [[[4-

[(hydroxyimino) methyl] pyridinio] methoxy] methyl] , dichloride

HS-6 22625-23-6

UF N,N'-Oxydimethylene-bis (pyridinium-2-aldoxime-3 carboxamido)

UF Pyridinium, 1-[[[3-(aminocarbonyl) pyridinio]methoxy] methyl] -2-[(hydroxyimino) methyl] -, dichloride

Hydrazine, phenyl

U Phenylhydrazine

Hydrofluoric acid 7664-39-3

UF Hydrogen fluoride

Hydrogen 1333-74-0

## Hydrogen-3

- U Tritium
- Hydrogen fluoride
  - U Hydrofluoric acid
- Hydrogen, isotopes of
  - NT Tritium
- Hydrolases
  - NT Esterases
    - NT Peptide hydrolases
    - NT Phosphatases
- Hydrolysis
- Hydroxyimino compounds
  - U Oximes
- Hydroxyimino group
- 2-Hydroxyiminomethyl-1-methylpyridinium 154-97-2 51729-73-8
  - methanesulfonate
  - U P2S
- bis(4-hydroxyiminomethyl-pyridinium- 1-methyl)- ether
  - dichloride
  - U Toxogonin
- Beta-Hydroxylalanine
  - U Serine
- Hydroxyl group
- alpha-(Hydroxymethyl)benzeneacetic acid
  - U Tropic acid
- Tris (hydroxymethyl) methanamine
  - U Tris buffer
- 7-Hydroxyquinoline 580-20-1
- Hydroxyquinolines
- Hyoscine
  - U Scopolamine
- Hyoscyamine 101-31-5
  - U Atropine
- Hyperglycemia
  - RT Blood glucose
- Hypersensitivity
  - RT Allergens
  - RT Allergy
  - RT Anaphylaxis
  - RT Immunity
  - RT Immunology
  - RT Sensitization
- Hypertension
  - UF Blood pressure, high
- Hyperthermia
  - U Fever
- Hypnotics and Sedatives
  - NT Barbiturates

## Hypnotics and Sedatives (cont'd)

NT Sedatives, Nonbarbiturate

RT Tranquilizing agents

UF Sedatives

## Hypo

U Sodium thiosulfate

## Hypotension

UF Blood pressure, low

## Hypothalamus

## Hypothermia

RT Cold

## Hypoxia

U Anoxia

## Ileum

Imidazole 288-32-4

1H-Imidazole-4-ethanamine

U Histamine

1H-Imidazole-1-ethanol, alpha-(methoxymethyl)-2-methyl

4-nitro-

U AM-1

4-Imidazoleethylamine

U Histamine

Imidazoline 28299-33-4

2-(4-Imidazolyl)ethylamine

U Histamine

## Immobilization

## Immunity

NT Antibody diversity

NT Antibody formation

NT Antibody specificity

NT Antigen-antibody reactions

NT Immunity, natural

NT Immunity, passive

RT Dose-response relationship

RT Hypersensitivity

RT Receptors, immunologic

Immunity, natural

BT Immunity

Immunity, passive

BT Immunity

## Immunization

## Immunology

RT Hypersensitivity

## Incubation

1H-Indol-3-ol

U Indoxyl

Indophenol acetate

U Indophenyl acetate

Indophenyl acetate 7761-80-0

UF Indophenol acetate

Indoxyl 480-93-3

UF 1H-Indol-3-ol



Indoxyl acetate 608-08-2

UF 3-Acetoxyindole

Induction

Inferno

U Amiton

Inflammation

Infrared spectra

Infrared spectrometry

Inhalation

BT Breathing

Inhalation chambers

UF Exposure, chambers, inhalation

Inhalation tests

Inhalation toxicity

Inhibition

Inhibition, neural

U Neural inhibition

Inhibitor

Injuries

Insecticides

NT Amiton

NT Insecticides, organophosphate

NT Insecticides, organothiophosphate

NT Malathion

RT Cholinesterase inhibitors

Insecticides, carbamate

NT Aldicarb

Insecticides, organophosphate

BT Insecticides

NT Chlorfenvinphos

NT Crufomate

NT Mevinphos

NT Monocrotophos

NT Naled

NT Phosphamidon

Insecticides, Organophosphate

RT Organophosphorus compounds

Insecticides, organothiophosphate

BT Insecticides

BT Organothiophosphorus compounds

NT Abate

NT Azinphosmethyl

NT Bromophos

NT Coumaphos

NT Diazinon

NT Difonate

NT Disulfcton

## Insecticides, organothiophosphate (cont'd)

- NT EPN
- NT Ethion
- NT Fensulfothion
- NT Formothion
- NT Methyl mercaptophos
- NT Phorate
- NT Phosmet
- NT Phosvel
- NT Thiometon

## Interneurons

- BT Neurons

## Interrenal gland

- BT Adrenal glands

## Intestines

- BT Gastrointestinal system

## Intoxication

## Intracranial pressure

- RT Skull

## Iodine 7553-56-2

## Iodine monocyanoide

- U Cyanogen iodide

## Ionization

## Ions

## Irradiation

## Irritation

- RT Primary irritancy

## Ischemia

- RT Blood circulation

## Islands of Langerhans

- BT Endocrine glands

- UF Pancreas, endocrine

## Isoamyl acetate 123-92-2

- UF Amylacetic ester

## Isofluorophate

- U DFP (Pesticide)

## Isolan 119-38-0

## Isomerism and Isomers, optical

- UF Enantiomerism and Enantiomers

## Isomerism and Isomers

- UF Stereoisomerism and Stereoisomers

## Isonitrosoacetone

- U MINA

## Isonitroso compounds

- U Oximes

Iso-OMPA 513-00-8  
Isoprenaline  
U Isoproterenol  
Isopropanol  
U 2-Propanol  
Isopropoxymethylphosphoryl fluoride  
U Sarin  
Isopropyl alcohol  
U 2-Propanol  
Isopropyldimethylcarbinol  
U 2,3-Dimethyl-2-butanol

Isopropyl methyl fluorophosphonate  
U Sarin  
Isopropyl methyl phosphonofluoridate  
U Sarin  
Isoproterenol 7683-59-2  
UF Isoprenaline  
Isosystox 126-75-0  
JB-336 3321-80-0

UF Benzeneacetic acid, alpha-hydroxy-alpha-phenyl  
esters, 1-methyl-3-piperidinyll ester  
UF N-Methyl-3-hydroxypiperidine benzilate  
UF N-Methyl-3-piperidinyll benzilate  
JB-336/3 3689-80-3

UF Benzeneacetic acid, alpha-hydroxy-alpha-phenyl-,  
esters, 1-methyl-3-piperidinyll esters, hydrochloride  
UF N-Methylpiperidylbenzilate, hydrochloride  
JB-336/4 29568-43-0

UF Benzeneacetic acid, alpha-hydroxy-alpha-phenyl-,  
esters, 1-methyl-4-piperidinyll ester, hydrochloride  
UF N-Methyl-4-piperidyl benzilate hydrochloride  
UF N-Methyl-4-piperidyl diphenylglycolate  
hydrochloride

#### Joints

Jugular veins

Ketamine 6740-88-1

UF Cyclohexanone, 2-(2-chlorophenyl)-2  
(methylamino)-

#### Kidney

BT Urinary tract

#### Kinetics

#### Knee

#### Kymography

UF Cymography

## LA-1

U Nitrazepam  
Laboratory animals  
BT Animals  
NT Cats  
NT Dogs  
NT Guinea pigs  
NT Mice  
NT Monkeys  
NT Rabbits  
NT Rats  
RT Animal testing  
UF Animals, laboratory

## Lacunae

Lanthanum 7439-91-0

## LD50

NT Lethal dose  
UF Lethal dose 50

## Lecithins

General term. Use name of specific lecithins where indicated.

UF Lecithol  
UF Phosphatidylcholines

## Lecithol

U Lecithins

## Leeches

## Leg

## Lethal dose

BT LD50

## Lethal dose 50

U LD50

## Leucine 7005-03-0

UF 2-Amino-4-methylvaleric acid

UF alpha-Aminoisucaproic acid

## DL-Leucine 328-39-2

L-Leucine 61-90-5

## Leukocytes

BT Blood cells

UF White blood cells

## Lidocaine 137-58-6

UF Lignocaine

UF Xylocaine

## Ligaments

## Ligands

## Lignocaine

U Lidocaine

## Ligroin 8032-32-4

UF Petroleum ether

## Limbic system

Limbs

Lip

Lipids

NT Membrane lipids

Liver

LSD 50-37-3

UF Ergoline-8-carboxamide, 9,10-didehydro-N,N  
diethyl-6-methyl-, (8B)-

UF Lysergic acid diethylamide

UF Lysergide

LuH-6

U Toxogonin

Lung

NT Bronchi

NT Pulmonary alveoli

RT Air sacs

RT Respiration

Lymph

Lymphatic system

Lymph nodes

Lysergic acid diethylamide

U LSD

Lysergide

U LSD

Lysocytins

U Lysolecithins

Lysolecithins

For lysolecithins as a class. Prefer specific  
lysolecithins.

UF Lysocytins

UF Lysophosphatidylcholines

Lysophosphatidylcholines

U Lysolecithins

Macaca Mulatta

U Monkey, Rhesus

Magnesium 7439-95-4

Magnesium chloride 7786-30-3

Magnesium sulfate 7487-88-9

Malaoxon

U Malathion

Malathion 121-75-5

BT Insecticides

UF Butanedioic acid . [Dimethoxyphosphinothioyl)  
thio]-, diethyl ester

UF Malaoxon

## Mammals

BT Vertebrates

NT Cats

NT Dogs

## Mammals (cont'd)

NT Guinea pigs  
 NT Hamsters  
 NT Mice  
 NT Primates  
 NT Rabbits  
 NT Rats

Manganese 7439-96-5  
 Manometry  
   RT Pressure  
 Marmosets  
   U Callithricidae  
 Marrow  
   U Bone marrow  
 Mass spectra  
 Mass spectrometers and spectrographs  
 Mass spectrometry  
   U Mass spectroscopy  
 Mass spectroscopy  
   UF Mass spectrometry  
 Maximal voluntary ventilation  
   BT Respiratory air flow  
 Mecamine  
   U Mecamylamine  
 Mecamylamine 60-40-2  
   UF Mecamine  
   UF Bicyclo [2.2.1] heptan-2-amine, N,2,3,3,tetramethyl-  
   UF N,2,3,3-Tetramethylbicyclo 2.2.1 heptan-2-amine  
   UF Versamine  
 Mecholin  
   U Methacholine bromide  
 Mecholyl bromide  
   U Methacholine bromide  
 Medemo 51366-09-7  
   UF Ethoxy-2-dimethylamino-ethylthiomethyl-phosphine oxide  
   UF Phosphonothioic acid, methyl-, S-[ 2-[(dimethylamino)-  
     thio] ethyl] O-ethyl ester  
 Medulla oblongata  
 Methylnorepinephrine  
   U Norepinephrine  
 Membrane lipids  
   BT Lipids  
 Membrane potentials  
   RT Cell membrane  
   RT Membranes  
 Membranes  
   RT Cell membrane  
   RT Membrane lipids  
   RT Membrane potentials  
 Mepenzolate 25990-43-6

Mepenzolate bromide 76-90-43  
   UF N-Methyl-3-piperidyl benzilate methyl bromide  
 Meractinomycin  
   U Actinomycin D  
 2-Mercaptoethyl sulfide  
   U TDT  
 (2-Merceptoethyl)trimethylammonium iodide butyrate  
   U Butyrylthiocholine iodide  
 Mestinson 101-26-8  
   UF Mestinson bromide  
   UF Pyridostigmine bromide  
 Mestinson bromide  
   U Mestinson  
 Mesyl fluoride  
   U Methanesulfonic fluoride  
 Metabolic detoxication, drug  
 Metabolic inhibitors  
 Metabolism  
   NT Anaerobiosis  
 Metabolites  
 Methacholine 55-92-5  
   UF 1-Propanaminium, 2-(acetyloxy)-N,N,N-trimethyl-  
   UF Acetyl-beta-methylcholine  
 Methacholine bromide 333-31-3  
   UF 1-Propanaminium, 2-acetyloxy)-N,N,N-trimethyl-, bromide  
   UF Acetyl-beta-methylcholine bromide  
   UF Amezol  
   UF Mecholin  
   UF Mecholyl bromide  
 Methacholine chloride 62-51-1  
   UF 1-Propanaminium, 2 (acetyloxy)-N,N,N-trimethyl chloride  
   UF Acetyl-beta-methylcholine chloride  
 Methacholine iodide 625-19-4  
 Methanamine, N-methyl-  
   U Dimethylamine  
 Methanesulfonic fluoride 558-25-8  
   UF Fluoromethyl sulfone  
   UF Mesyl fluoride  
   UF MSF  
   UF Methylsulfonyl fluoride  
 Methanol 67-56-1  
   UF Alcohol, methyl  
 Methionine 7005-18-7  
 DL-Methionine 59-51-8  
 L-Methionine 63-68-3  
 1-Methyl-2-aldoximinopyridinium chloride  
   U 2-PAM chloride  
 Methylatropine 287-07-15  
 Methylatropine bromide 2870-71-5

Methylatropine bromide 2870-71-5

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Methylatropine bromide 2870-71-5 (cont'd)

UF Atropine methyl bromide

UF 8-Azoniabicyclo [3.2.1] octane, 3-(3-hydroxy-1  
oxo-2-phenylpropoxy)-8,8-dimethyl-, bromide, endo-

Methylatropine nitrate 52-88-0

UF 8-Azoniabicyclo [3.2.1] octane, 3-(3-hydroxy-1  
oxo-2-phenylpropoxy)-8,8-dimethyl-, endo-, nitrate

N-Methyl carbamate 63-25-2

UF 1-Naphthalenol, methylcarbamate

UF Carbaryl

UF Sevin

Methyl cyanide

U Acetonitrile

N,N'-bis (1-methylethyl)phosphorodiamidic fluoride

U Mipafox

Methyl glycol

U alpha-Propylene glycol

Methyl group

N-Methyl-3-hydroxypiperidine benzilate

U JB-336

Methyl isopropoxy phosphoryl fluoride

U Sarin

Methyl mercaptophos

BT Insecticides, organothiophosphate

Methyl parathion 298-00-0

Tris (o-methylphenyl) phosphate

U Tri-o-tolyl phosphate

Methyl phosphonate

U Phosphonic acid, dimethyl ester

Methylphosphonic acid

U Phosphonic acid, methyl-

Methylphosphonofluoridates

Methylphosphonofluoridic acid, 1-methylethyl ester

U Sarin

Methylphosphonofluoridic acid 1,2,2-trimethylpropyl  
ester

U Soman

Methylphosphonofluoridic acid 1,2,2-trimethyl propyl  
ester

U Soman

Methyl pinacolyloxy phosphoryl fluoride

U Soman

Methyl pinacolyl phosphonofluoridate

U Soman

N-Methyl-3-piperidinyl benzilate

U JB-336

N-Methylpiperidylbenzilate, hydrochloride

U JB-336/3



N-Methyl-4-piperidyl benzilate hydrochloride  
U JB-336/4

N-Methyl-4-piperidyl diphenylglycolate hydrochloride  
U JB-336/4

1-Methylpyridinium-2-aldoxime methanesulfonate  
U P2S

N-Methylpyridinium-2-aldoxime methane sulfonate  
U P2S

N-Methyl pyridinium-2-aldoxime trichloroacetate  
Methylpyridinium iodide 61734-40-5 930-73-4  
UF Pyridine methiodide

Methylscopolamine 13265-10-6  
UF Scopolamine methyl bromide

Methylscopolamine bromide 18905-44-7  
UF Scopolamine methyl bromide

Methylsulfonylfluoride  
U Methanesulfonic fluoride

Metocurine iodide  
U Dimethyl tubocurarine iodide

Metramac  
U Amiton

Mevinphos  
BT Insecticides, organophosphate

Mevinphos  
U Phosdrin

MI-217  
U Echothiophate

Mice  
BT Laboratory animals  
BT Mammals

Microcirculation

Microsomes

Microwaves

RT Diathermy

MINA 306-44-5

UF Isonitrosoacetone  
UF Monoisonitrosoacetone

UF Propanol, 2-oxo-1-oxime

UF Propanone 1-oxime

UF Pyruvaldehyde 1-oxime

Mipafox 371-86-8

UF N,N'-bis (1-methylethyl)phosphorodiamidic  
fluoride

UF N,N'-diisopropylphosphorodiamidic fluoride

UF Phosphorodiamidic fluoride, N,N-bis (1  
methylethyl)-

Mitochondria

Mitosis

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Mitosis

MMB-4 51026-61-0

UF Pyridinium, 1,1'-Methylenebis-4  
[hydroxyimino)methyl]-, dichloride

Monkey, Rhesus

BT Monkeys

UF Macaca Mulatta

Monkeys

BT Laboratory animals

NT Monkey, Rhesus

Monobutylphosphoric acid

U Butyl dihydrogen phosphate

Monocrotophos

BT Insecticides, organophosphate

Monoisonitrosoacetone

U MINA

Monopotassium oxalate

U Potassium acid oxalate

Morphine 57-27-2

Morpholinium, 2,2'-[1,1'-biphenyl] 4,4'-diylbis [2  
hydroxy-4,4-dimethyl-

U Hemicholinium

Morpholinium, 2,2'-[1,1'-biphenyl] 4,4'-diylbis [2  
hydroxy-4,4-dimethyl-, dibromide-

U HC-3

Morpholinium, 2,2'-[1,1'-biphenyl] 4,4'-diylbis [2  
hydroxy-4,4-dimethyl-, dibromide

U Hemicholinium-3

Morphothion 144-41-2

Mortality

UF Death rate

Motor activity

Motor endplate

U Neuromuscular junction

Motor neurons

BT Neurons

Mouth

MPA

U Phosphonic acid, methyl-

MSF

U Methanesulfonic fluoride

Mucus

Muscaranic action

Muscarinic agents

U Parasympathomimetics

Muscarinic receptors

U Receptors, muscarinic

Muscle contraction

RT Muscle relaxation

Muscle denervation

Muscle relaxants, central  
Muscle relaxation  
    RT Muscle contraction

Muscle rigidity  
Muscles

    General term. See Table of Muscles for specific names.

    NT Gastrocnemius muscle  
    NT Pectoralis muscles  
    NT Tibial muscle

Muscle, smooth

Muscle spasticity

    UF Spasticity, muscle

Musculoskeletal system

Mustard

Mustard gas

    U 2,2'-Dichloroethyl sulfide

Mutagens

    RT Mutation

    RT Teratogenic agents

Mutation

    RT Mutagens

Myocardial depressants

    U Anti-arrhythmia agents

Myoclonus

Myoneural junction

    U Neuromuscular junction

Nails

Naled

BT Insecticides, organophosphate

Naphtha

BT Benzin

1-Naphthalenol, methylcarbamate

U N-Methyl carbamate

Beta-Naphthol acetate

U Beta-Naphthyl acetate

Naphthols

2-Naphthyl acetate

U Beta-Naphthyl acetate

Beta-Naphthyl acetate 1523-11-1

UF 2-Acetoxy-naphthalene

UF 2-Naphthyl acetate

UF Beta-Naphthol acetate

UF O-Acetyl-beta-naphthol

Neck

Neoserine methyl sulfate

U Neostigmine methyl sulfate

Neostigmine 59-99-4

UF Benzenaminium, 3-[[[(dimethylamino) carbonyl]oxy]

N,N,N-trimethyl-

UF Prostigmin

UF Prostigmine

Neostigmine bromide 114-80-7

UF Prostigmin bromide

UF Prostigmine bromide

Neostigmine methyl sulfate 51-60-5 59954-03-9

UF Neoserine methyl sulfate

UF Prostigmine methyl sulfate

Nerve block

Nerve cells

U Neurons

Nerve degeneration

UF Neuron degeneration

UF Retrograde degeneration

Nerve endings

NT Neuroeffector junction

NT Pressorreceptors

NT Receptors, sensory

NT Thermoreceptors

RT Neural transmission

Nerve endings, sensory

U Receptors, sensory

Nerve fibers

NT Axons

Nerve gases

Nerve-muscle preparation

U Neuromuscular junction

Nerve net

U Nervous system

Nerve regeneration

Nerves

NT Tibial nerve

NT Vagus nerve

Nerve stimulation

Nerve tissue

Nerve transmission

U Neural transmission

Nerve transmitter substances

U Neuroregulators

Nervous system

NT Autonomic nervous system

NT Central nervous system

UF Nerve net

Nervous system diseases

RT Neurology

Nervous system physiology

Neural conduction

Conduction along a single nerve, as opposed to  
neural transmission (between neurons)

RT Neurons

UF Nerve conduction

Neuralgia

Neural inhibition

UF Inhibition, neural

Neural pathways

Neural transmission

RT Nerve endings

Transmission between nerves, as opposed to neural  
conduction (along a single nerve)

UF Nerve transmission

Neuritis

Neuroblast

Neuroblastoma

Neurochemistry

Neuroeffector junction

BT Nerve endings

Neurofibrils

BT Neurons

Neurohumors

U Neuroregulators

Neuroleptics

U Tranquilizing agents, major

Neurologic examination

Neurologic manifestations

Neurology

RT Nervous system diseases

Neuromodulators

U Neuroregulators

Neuromuscular blocking agents

Neuromuscular diseases

Neuromuscular agents

## Neuromuscular functions

Neuromuscular functions  
Neuromuscular junction

- UF Motor endplate
- UF Myoneural junction
- UF Nerve-muscle preparation

- Neuromuscular paralysis
- Neuromuscular spindles
- Neuromuscular transmission
- Neuromuscular agents
- Neuron degeneration
- U Nerve degeneration

## Neurons

- NT Autonomic fibers
- NT Axons
- NT Dendrites
- NT Interneurons
- NT Motor neurons
- NT Neurofibrils
- NT Neurons, afferent
- NT Neurons, efferent
- NT Synapses
- RT Neural conduction
- UF Nerve cells

- Neurons, afferent
- BT Neurons
- UF Neurons, sensory

- Neurons, efferent
- BT Neurons

- Neurons, sensory
- U Neurons, afferent

## Neuropathy

## Neurophysiology

- RT Gensation

## Neuroreceptors

- U Receptors, sensory

## Neuroregulators

- UF Nerve transmitter substances

- UF Neurohumors

- UF Neuromodulators

- UF Neurotransmitters

## Neurosecretion

## Neurosurgery

## Neurotendinous spindles

## Neurotoxins

## Neurotransmitters

- U Neuroregulators

## Niacin

- U Nicotinic acid

Nicotine 54-11-5  
 Nicotinic acid 59-67-6  
     UF 3-Pyridinecarboxylic acid  
     UF Niacin  
 Nicotinic acid 1-oxide  
     U Oxiniacic acid  
 Nicotinic agents  
     U Ganglionic stimulants  
 Nicotinic receptors  
     U Receptors, nicotinic  
 Nicotinohydroxamic acid 5657-61-4  
     UF 3-Pyridinecarboxamide, N-hydroxy-  
 Nictitating membrane  
     RT Eyelids  
 Niter  
     U Sodium nitrate  
 Nitrazepam 146-22-5  
     UF 1,3-Dihydro-7-nitro-5-phenyl-2H-1,4-  
         benzodiazepin-2-one  
     UF 2H-1,4-Benzodiazepin-2-one, 1,3,dihydro-7-nitro  
         5-phenyl-  
     UF Benzalin  
     UF LA-1  
     UF Nitrodiazepam  
 Nitric acid, sodium salt  
     U Sodium nitrate  
 Nitrodiazepam  
     U Nitrazepam  
 Nitrogen 7727-37-9  
     RT Amino compounds  
 Nitrogen oxide  
     U Nitrous oxide  
 p-Nitrophenyl ethyl pentylphosphonate 3015-75-6  
 1-Nitropropane 108-03-2  
 Nitrostigmine  
     U Parathion  
 Nitrous oxide 10024-97-2  
     UF Dinitrogen monoxide  
     UF Nitrogen oxide  
 NMR  
     U Nuclear magnetic resonance  
 NMR spectra  
     U Nuclear magnetic resonance spectra  
 Noradrenaline  
     U Norepinephrine  
 Norepinephrine 51-41-2  
     UF Arterenol  
     UF Methylnorepinephrine  
     UF Noradrenaline  
 Nose

Nuclear magnetic resonance

UF NMR

Nuclear magnetic resonance spectra

UF NMR spectra

Nucleophiles

Specific headings are used for specific nucleophiles.

Nucleosides

NT Adenosine

Nucleotides

Nucleotides, cyclic

UF Cyclic nucleotides

OAB

U 3-Diethylaminopropyl oximinoacetate

Obidoxime

UF Toxogonin

Obidoxime chloride

U Toxogonin

Obidoxime hydrochloride

U Toxogonin

Occiput

Octamethyldiphosphoramidate

U Octamethyl pyrophosphoramidate

Octamethyl pyrophosphoramidate 152-16-9

UF Diphosphoramidate, octamethyl-

UF Octamethyldiphosphoramidate

UF OMPA

UF Sytam

Oligomycin B 11050-94-5

BT Oligomycins

Oligomycins

NT Oligomycin B

Olive oil

OMPA

U Octamethyl pyrophosphoramidate

Optical rotation

Organophosphate poisoning

Organophosphates

U Organophosphorus compounds

Organophosphorus compounds

NT Aminoethylphosphonic acid

NT Armin

NT Phosphonoacetic acid

NT Phosphoric acid, esters

NT Pyrophosphoric acid, esters

NT Sarin

NT Soman

RT Insecticides. Organophosphate

UF Organophosphates

UF Phosphates, organic



Organothiophosphorus compounds

NT Insecticides, organothiophosphate

Orthophosphoric acid

U Phosphoric Acid

Oscillometry

Oscilloscope

UF Cathode ray oscilloscope

UF CRO

Ouabain 630-60-4

UF Acocantherin

UF G-Strophanthin

Oxalates

Oximes

NT Toxogonin

UF Hydroxyimino compounds

Oximes, di-

U Dioximes

3-Oximino-2-pentanone 609-29-0

Oxiniac acid 2398-81-4

UF 3-Carboxypyridine N-oxide

UF Nicotinic acid 1-oxide

Oxotremorine 70-22-4

UF 2-pyrrolidinone, 1-[4-(1-Pyrrolidinyl)-2-butynyl]-

N,N'-Oxydimethylene-bis (pyridinium-2-aldoxime-3-carboxamido)

U HS-6

1,1'-Oxydimethylene bis-(4-tert)-butylpyridinium chloride

U SAD-128

Oxygen 7782-44-7

Oxygenation

Oxygen consumption

Oxygen deficiency

U Anoxia

Oxyparathion

U Paraoxon

<sup>32</sup>P

A beta-emitting radioactive phosphorus isotope

UF Phosphorus-32

P2S 154-97-2 51729-73-8

UF 1-Methylpyridinium-2-aldoxime methanesulfonate

UF 2-Hydroxyiminomethyl-1-methylpyridinium methanesulfonate

UF 2-PAM methanesulfonate

UF N-Methylpyridinium-2-aldoxime methane sulfonate

UF Pralidoxime mesylate

UF Pralidoxime methanesulfonate

UF Pyridine-2-aldoxime methyl methanesulfonate

UF Pyridinium, 2-[(hydroxyimino)methyl]-1-methyl-, methanesulfonate (salt)

Pain

## Pain (cont'd)

RT Analgesia

PAM 94-63-3

UF 2-PAM

UF 2-FAM iodide

UF 2-Pyridine aldoxime methyl iodide

UF 2-Pyridinium aldoxime methochloride

UF Pralidoxime iodide

UF Pralidoxime methiodide

UF Pyridinium, 2-[(hydroxyimino)methyl]-1-methyl-,  
iodide

2-PAM

U PAM

2-PAM chloride 51-15-0 27951-78-6

UF 1-Methyl-2-aldoximinopyridinium chloride

UF 2-Pyridinealdoxime methochloride

UF Pralidoxime chloride

2-PAM iodide

U PAM

2-PAM methanesulfonate

U P2S

Pancreas

RT Exocrine glands

Pancreas, endocrine

U Islands of Langerhans

Pancreatic ducts

Paper chromatography

U Chromatography, paper

Paper electrophoresis

Paralysis

Paraoxon 311-45-5

U Parathion

UF Diethyl-p-nitrophenyl phosphate

UF E-600

UF Ethyl paraoxon

UF Oxyparathion

UF Phosphacol

UF Phosphoric acid, esters, diethyl-4-nitrophenyl  
ester

Parasympathetic ganglia

U Ganglia, parasympathetic

Parasympathetic nervous system

Parasympatholotics

NT Caramiphen hydrochloride

Parasympatholytics

NT Benactyzine

NT Carbachol

UF Anticholinergic agents

UF Antimuscarinic agents

UF Cholinergic blocking agents

UF Cholinolytics

Parasympathomimetics

## Parasympathomimetics (cont'd)

- NT Atropine
  - UF Cholinergic agents
  - UF Cholinomimetics
  - UF Muscarinic agents
- Parathion 56-38-2
  - UF AATP
  - UF Diethyl p-nitrophenyl phosphorothionate
  - UF Diethyl p-nitrophenylthionophosphate
  - UF Diethyl p-nitrophenylthiophosphate
  - UF Ethyl parathion
  - UF Nicrostigmine
  - UF Paraoxon
  - UF Phosphorothioic acid, esters, O,O-diethyl O-(4 nitrophenyl) ester
  - UF Thiophes
- Parathyroid glands
  - BT Endocrine glands
- Parpanil
  - U Caramiphen
- Parpanit
  - U Caramiphen hydrochloride
- Pathology
  - NT Histopathology
- Pectoralis muscles
  - BT Muscles
- Pelvis
- Pentaphen
  - U Caramiphen
- Pentaphene hydrochloride
  - U Caramiphen hydrochloride
- Pentobarbital 76-74-4 UF Pentobarbitone
- Pentobarbital sodium 57-33-0
  - UF Pentobarbitone sodium
  - UF Sodium 5-ethyl-5-(1-Methylbutyl) barbiturate
  - UF Sodium pentobarbital
  - UF Sodium pentobarbitone
- Pentobarbitone sodium
  - U Pentobarbital sodium
- Peptide hydrolases
  - BT Hydrolases
  - NT Alpha-Chymotrypsin
  - UF Proteolytic enzymes
- Perchloric acid 7601-90-3
- Percutaneous absorption
- Perfusion
- Perfusion, regional
- Perineum
- Periodicity
  - RT Circadian rhythm
- Peripheral nerves

## Permeability

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### Permeability

#### Permeability, cell membrane

U Cell membrane permeability

### Pesticides

#### Petroleum ether

BT Benzin

U Ligroin

### pH

RT Acidity

### Phencapton

U Phencapton

### Phencapton 2275-14-1

BT Phosphorodithioic acid, esters

UF Phencapton

UF Phenkaptone

UF Phosphorodithioic acid, esters, S-[[ (2,5  
dichlorophenyl)thio]methyl]O,O-diethyl ester

### Phenkaptone

U Phencapton

### Phenobarbital 50-06-6

### 10H-Phenothiazine, 10[(diethylamino)-acetyl]

U Difazin

### 10H-Phenothiazine-10-propanamine, N,N-dimethyl-2- (trifluoromethyl)-

U Triflupromazine

### Phenoxybenzamine

U Dibenzylamine

### Phenoxybenzamine chloride

U Dibenzylamine hydrochloride

### Phenoxybenzamine hydrochloride

U Dibenzylamine hydrochloride

### Phenyl acetate 122-79-2

UF Acetic acid phenyl ester

UF Acetyl phenol

### alpha-Phenylbenzeneacetic acid 2-(diethylamino) ethyl ester

U Trasentine hydrochloride

### Phenylhydrazine 100-63-0

UF Hydrazine, phenyl

UF PHZ

### Phenyl saligenin phosphate 4081-23-6

UF Saligenin cyclic phenyl phosphate

### Phorate 298-02-2

BT Insecticides, organothiophosphate

U Thimet

### Phosdrin 7786-34-7

UF Mevinphos

UF 2-Butenoic acid, 3-[(dimethoxy-phosphinyl)oxyl]  
methyl ester

### Phosgene 75-44-5

UF Carbonic dichloride

UF Carbonyl chloride

Phosmet  
    BT Insecticides, organothiophosphate  
Phosphacol  
    U Paraoxon  
Phosphamide  
    U Dimethoate  
Phosphamidon      13171-21-6  
    BT Insecticides, organophosphate  
Phosphatases  
    BT Hydrolases  
    NT Adenosine triphosphatase  
Phosphate esters  
    U Phosphoric acid, esters  
Phosphates  
    UF Phosphates, inorganic  
Phosphates, inorganic  
    U Phosphates  
Phosphates, organic  
    U Organophosphorus compounds  
Phosphatidylcholines  
    U Lecithins  
    UF Choline phosphoglycerides  
Phosphodiesterases  
    NT Cyclic nucleotide phosphodiesterases  
Phospholine  
    U Echothiophate  
Phospholine iodide  
    U Echothiophate iodide  
Phospholipids  
Phosphonate  
    U Phosphonic acid, ion(2-)  
Phosphonates  
Phosphonic acid      13598-36-2  
Phosphonic acid, dimethyl ester      868-85-9  
    UF Methyl phosphonate  
Phosphonic acid, ethyl-, ethyl 4-nitrophenyl ester  
    U Armin  
Phosphonic acid, ion(2-)  
    UF Phosphonate  
Phosphonic acid, methyl-  
    UF Methylphosphonic acid  
    UF MPA  
Phosphonoacetic acid  
    BT Organophosphorus compounds  
Phosphonofluoridic acid      14939-29-8  
Phosphonofluoridic acid, methyl-, 1-methylethyl ester  
    U Sarin  
Phosphonofluoridic acid, methyl-, 1,2,2-trimethylpropyl  
    ester  
    U Soman  
Phosphonofluoridimidic acid      27682-26-4  
Phosphonothioic acid, methyl-, O-ethyl ester

Phosphonothioic acid, methyl-,O-ethyl ester

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Phosphonothioic acid, methyl-,O-ethyl ester (cont'd)

U GR-42

Phosphonothioic acid, methyl-, O-ethyl S-[2-(ethylthio)ethyl] ester

U GD-7

Phosphonothioic acid, methyl-, S-[2  
[(dimethylamino)thio]ethyl]O-ethyl ester .

U Medemo

Phosphonothioic acid, phenyl-O-ethyl O-(4  
nitrophenyl)ester Equilibrium

U EPN

Phosphonylation

Phosphoramidothioic acid, (1-methylethyl)-O-(2,4  
dichlorophenyl)-O-methyl ester

U DMPA (herbicide)

Phosphoric acid 7664-38-2

UF Orthophosphoric acid

Phosphoric acid, esters

BT Organophosphorus compounds

UF Phosphate esters

Phosphoric acid, esters, 2,2-dichloroethenyl dimethyl  
ester

U DDVP

Phosphoric acid, esters, diethyl-4-nitrophenyl ester

U Paraoxon

Phosphoric acid, esters, ethyl ester

UF Ethyl phosphoric acid

Phosphoroamidocyanidic acid, dimethyl-, ethyl ester

U Tabun

Phosphorodiamide fluoride, tetramethyl-

U Dimefox

Phosphorodiamidic fluoride, N,N-bis (1-methylethyl)-

U Mipafox

Phosphorodithioic acid, esters

NT Phenkapton

Phosphorodithioic acid, esters, S-[[2,5  
dichlorophenyl)thio]methyl]O,O-diethyl ester

U Phenkapton

Phosphorodithionic acid, esters, O,O-dimethyl S-[2  
(methylamino)-2-oxoethyl] ester

U Dimethoate

Phosphorofluoridic acid, bis (1-methylethyl) ester

U DFP (Pesticide)

U Isofluorophate

Phosphorothioic acid, O,O-diethyl O-(2-isopropyl-6  
methyl-4-pyrimidinyl) ester

U Diazinon

Phosphorothioic acid, esters, O,O-diethyl O-(4-nitrophenyl) ester  
U Parathion  
Phosphorothioic acid, esters, S-[2-(diethylamino)ethyl] O,O-diethyl ester  
U Amiton  
Phosphorus 7723-14-0  
Phosphorus-32  
U <sup>32</sup>P  
Phosphorylase phosphatase  
Phosphorylation  
Phosphorylcholine 107-73-3  
BT Choline  
UF Choline phosphate chloride  
Phosphorylthiocholines  
Phosvel  
BT Insecticides, organothiophosphate  
Phrenic nerve  
Physical stimulation  
UF Stimulation, physical  
Physostigmine 50975-37-6 57-47-6  
UF Eserine  
Physostigmine hydrochloride 6091-12-9  
Physostigmine salicylate 57-64-7  
Physostigmine sulfate 64-47-1  
PHZ  
U Phenylhydrazine  
Pinacoloxymethylphosphoryl fluoride  
U Soman  
Pinacolyl alcohol 464-07-3  
UF 2-Butanol, 3,3-dimethyl-  
Pinacolyl hydrogen methylphosphonate  
U PMPA  
O-Pinacolyl hydrogen methylphosphonate  
U PMPA  
Pinacolyl methylfluorophosphonate  
U Soman  
O-Pinacolyl methylphosphonate  
U PMPA  
Pinacolyl methylphosphonic acid  
U PMPA  
Pinacolyl methylphosphonofluoridate  
U Soman  
Pineal body  
BT Endocrine glands  
Piperazines  
NT DMPP  
Piperazinium, 1,1-dimethyl-4-phenyl-, iodide  
U DMPP

Pituitary-adrenal system  
     BT Endocrine glands  
 Pituitary gland  
     BT Endocrine glands  
 Plasma  
     UF Blood plasma  
 Plasma membrane  
     U Cell membrane  
 Pleura  
 PMCG 2001-91-4  
     UF N-Ethyl-2-pyrrolidylmethyl-phenyl cyclopentylglycolate hydrochloride  
 PMFP  
     U Soman  
 PMPA 616-52-4  
     UF O-Pinacolyl hydrogen methylphosphonate  
     UF O-Pinacolyl methylphosphonate  
     UF Pinacolyl hydrogen methylphosphonate  
     UF Pinacolyl methylphosphonic acid  
<sup>32</sup>P-PMPA  
     UF <sup>32</sup>P-Pinacolyl methylphosphonic acid  
 Poisoning  
     RT Antidotes  
     RT Poisons  
     RT Toxicology  
 Poisons  
     RT Poisoning  
     RT Toxicology  
 Polyethyleneglycol octylphenol ether  
     U Triton X-100  
 Ponalid  
     U Ethylbenztropine  
 Pons  
 Potassium 7440-09-7  
 Potassium acid oxalate 127-95-7  
     UF Monopotassium oxalate  
     UF Potassium hydrogen oxalate  
     UF Potassium oxalate  
 Potassium chloride 7447-40-7  
 Potassium fluoride 7789-23-3  
 Potassium hydrogen oxalate  
     U Potassium acid oxalate  
 Potassium iodide 7681-11-0  
 Potassium oxalate  
     U Potassium acid oxalate  
 Potassium persulfate 7727-21-1  
 Potency  
 Potentiation  
 Pralidoxime chloride



Pralidoxime chloride (cont'd)  
    U 2-PAM chloride  
Pralidoxime iodide  
    U PAM  
Pralidoxime mesylate  
    U P2S  
Pralidoxime methanesulfonate  
    U P2S  
Pralidoxime methiodide  
    U PAM  
Pressorreceptors  
    BT Nerve endings  
Pressure  
    RT Blood pressure  
    RT Manometry  
    RT Venous pressure  
Prilocaine 721-50-6  
    UF Propitocaine  
Primary irritancy  
    RT Irritation  
Primates  
    ST Mammals  
Procaine 59-46-1  
    UF Benzoic acid, 4-amino, 2-(diethylamino) ethyl ester  
Promazil  
    U Chlorpromazine  
Promethium 7440-12-2  
    Radioactive, metallic chemical element, formerly called florentium and  
        illinium  
1-Propanaminium, 2-(acetyloxy)-N, N, N-trimethyl-  
    U Methacholine  
1-Propanaminium, 2-acetyloxy)-N, N, N-trimethyl-, bromide  
    U Methacholine bromide  
1-Propanaminium, 2(acetyloxy)-N, N, N-trimethyl-, chloride  
    U Methacholine chloride  
1,2-Propanediol  
    U alpha-Propylene glycol  
1,3-Propanediol, 2-amino-2-(hydroxymethyl)-  
    U Tris buffer  
Propanil 709-98-8  
    UF DPA  
2-Propanol 67-63-0  
    UF Isopropanol  
    UF Isopropyl alcohol  
1-Propanol, 3-(diethylamino)-, diphenylacetate, hydrochloride  
    U Arpenal  
Propanol, 2-oxo-1-oxime  
    U MINA

Propanone 1-oxime  
U MINA  
Propionylcholine 5072-54-8  
Propionylcholine chloride 2365-13-1  
Propionylcholine iodide 5072-54-8  
Propionylcholinesterase  
U Cholinesterase  
Propitocaine  
U Prilocaine  
alpha-Propylene glycol 57-55-6  
UF 1,2-Propanediol  
UF Methyl glycol  
beta-Propylene glycol 504-63-2  
Prostigmin  
U Neostigmine  
Prostigmin bromide  
U Neostigmine bromide  
Prostigmine  
U Neostigmine  
Prostigmine bromide  
U Neostigmine bromide  
Prostigmine methyl sulfate  
U Neostigmine methyl sulfate  
Protective doses  
Protective index  
Protective ratio  
Proteins  
General use only. Prefer specific proteins.  
Proteolytic enzymes  
U Peptide hydrolases  
  
Pseudocholinesterase  
U Cholinesterase  
Pulmonary alveoli  
BT Lung  
Pulse  
Purification  
Pyramat 2532-49-2  
Pyridine 110-86-1  
UF Pyridine ring  
2-Pyridinealdehyde methochloride  
U 2-PAM chloride  
2-Pyridine aldehyde methyl iodide  
U PAM  
Pyridine-2-aldehyde methyl methanesulfonate  
U P2S  
3-Pyridinecarboxamide, N-hydroxy-  
U Nicotinoic acid  
3-Pyridinecarboxylic acid

3-Pyridinecarboxylic acid (cont'd)  
     U Nicotinic acid  
 Pyridine, compounds  
 Pyridine methiodide  
     U Methylpyridinium iodide  
 Pyridine ring  
     U Pyridine  
 Pyridines  
 Pyridinium, 1-[[[3-(aminocarbonyl) pyridinio]methoxy]methyl]-2-[(hydroxyimino)methyl]-, dichloride      U. HS-6  
 Pyridinium, 1-[[[4-aminocarbonylpyridinio]methoxy]methyl]-2-[(hydroxyimino)methyl]-dichloride  
     U HI-6  
 Pyridinium, compounds  
 Pyridinium, 3-[[[(dimethylamino)carbonyl]oxy]-1-methyl]-  
     U Pyridostigmine  
 Pyridinium, 2-[(hydroxyimino)methyl]-1-[[[4-[(hydroxyimino)methyl]pyridinio]methoxy]methyl], dichloride      U HS-3  
 Pyridinium, 2-[(hydroxyimino)methyl]-1-methyl-, methanesulfonate (salt)  
     U P2S  
 Pyridinium, 2-[(hydroxyimino)methyl]-1-methyl-, iodide  
     U PAM  
 2-Pyridinium aldoxime methochloride  
     U PAM  
 Pyridinium, 1,1'-Methylenebis-4-[(hydroxyimino)methyl]-, dichloride  
     U MMB-4  
 Pyridinium, 1,1' [oxybis(methylene bis[4-[(hydroxyimino)methyl]-dichloride  
     U Toxogonin  
 Pyridinium, 1,1' [oxybis(methylene)]bis[4-(1,1-dimethylethyl)-, dichloride  
     U SAD-128  
 Pyridinium, 1,1'-(1,3-propanediyl)bis [4-[(hydroxyimino)methyl]-, dibromide  
     U TMB-4  
  
 Pyridostigmine 155-97-5  
     UF Pyridinium, 3-[[[(dimethylamino)carbonyl]oxy]-1-methyl]-  
 Pyridostigmine bromide 101-26-8  
     U Mestinon  
 2,4,6 (1H,3H,5H)-pyrimidinetrione, 5,5-diethyl-  
     U Barbital  
 2,4,6 (1H,3H,5H)-Pyrimidinetrione, 5,5 diethyl  
     U Barbital  
 Pyrolan 87-47-8

Pyrophosphoric acid, esters

68

Pyrophosphoric acid, esters

BT Organophosphorus compounds

Pyrophosphoric acid tetraethyl ester

U Tetraethyl pyrophosphate

2-pyrrolidinone, 1-[4-(1-pyrrolidinyl)-2-butynyl]-

U Oxotremorine

Pyrvaldehyde 1-oxime

U MINA

Quaternary ammonium compounds

Quinine 130-95-0

Quinolinium compounds

Quinuclidines

NT Quinuclidinyl benzilate

NT Quinuclidinyl benzilate hydrochloride

Quinuclidinyl benzilate

BT Quinuclidines

Quinuclidinyl benzilate hydrochloride 13004-56-3

BT Quinuclidines

UF HNB-3

Rabbits

BT Laboratory animals

BT Mammals

Radicals, acyl

UF Acyl groups

Radicals, alkoxy

UF Alkoxy

Radicals, alkyl

UF Alkyl radical

Radioactivity

Radioautography

U Autoradiography

Radioimmunoassay

Radiometry

RT Geiger Counter

Rare earth metals

Rats

BT Laboratory animals

BT Mammals

Rat tail BT Tail

Reaction time

UF Response time

Reactivation

Reactivity

Receptors

Receptors, cholinergic

UF Cholinergic receptors

UF Cholinceptive sites

UF Cholinoceptors

Receptors, immunologic

RT Immunity

Receptors, muscarinic

- Receptors, muscarinic (cont'd)
  - UF Muscarinic receptors
- Receptors, nicotinic
  - UF Nicotinic receptors
- Receptors, sensory
  - BT Nerve endings
  - UF Nerve endings, sensory
  - UF Neuroreceptors
- Red blood cells
  - U Erythrocytes
- Renal artery
- Renal damage
- Renal veins

#### Research design

- UF Experimental design
- Resistance
- Respiration
  - NT Aspiration
  - RT Apnea
  - RT Lung
- Respiration, artificial
  - UF Artificial respiration
  - UF Artificial ventilation
  - UF Ventilation, mechanical

- Respiration disorders
- Respirators
  - UF Ventilators, pulmonary
- Respiratory air flow
  - NT Maximal voluntary ventilation
- Respiratory center
- Respiratory depression
- Respiratory failure
  - U Respiratory insufficiency
- Respiratory function tests
- Respiratory insufficiency
  - UF Respiratory failure
- Respiratory paralysis
- Respiratory system
- Response time
  - U Reaction time
- Reticulocytes
  - RT Erythrocytes
- Retina
- Retrograde degeneration
  - U Nerve degeneration
- Ribonucleic acids
  - U RNA

## RNA

- UF Ribonucleic acids
- RNA, Messenger
- RNA, Transfer
- Ro-3-0340 5823-10-9
- Ro-2-3308 6581-06-2
- SAD-128 40225-02-3
  - UF 1,1'-Oxydimethylene bis-(4-tert)-butylpyridinium chloride
- Saligenin cyclic phenyl phosphate
  - U Phenyl saligenin phosphate
- Saline
  - U Sodium chloride
- Sarin 107-44-8
  - BT Organophosphorus compounds
  - UF Isopropoxymethylphosphoryl fluoride
  - UF Isopropyl methyl fluorophosphonate
  - UF Isopropyl methyl phosphonofluoridate
  - UF Methyl isopropoxy phosphoryl fluoride
  - UF Methylphosphonofluoridic acid, 1-methylethyl ester
  - UF Phosphonofluoridic acid, methyl-, 1-methylethyl ester
- 32P-Sarin

- Sciatic nerve
- Scintillation counting
- Scopolamine 51-34-3
  - UF Hyoscine
- Scopolamine hydrobromide 114-49-8
- Scopolamine methyl bromide
  - U Methylscopolamine
  - U Methylscopolamine bromide
- SD 1652
  - U 2,2-dichlorovinyl diethyl phosphate
- Seawater, artificial
- Sebaceous glands
- Secretions
- Sedatives
  - U Hypnotics and Sedatives
- Sedatives, Nonbarbiturate
  - BT Hypnotics and Sedatives
- Seizures
- Sensation
  - RT Neurophysiology
- Sense organs
  - NT Ear
  - NT Eye
- Sensitization

## Sensitization (cont'd)

RT Hypersensitivity

Serine 6898-95-9

UF 2-Amino-3-hydroxypropionic acid

UF Beta-Hydroxylalanine

L-Serine 56-45-1

Serum

Serum albumin

Serum albumin, bovine

UF Bovine serum albumin

Sevin

U N-Methyl carbamate

Sheep

Shoulder

Skin

Skin absorption

UF Absorption, skin

UF Dermal absorption

Skin, animal

Skull

RT Intracranial pressure

Soda niter

U Sodium nitrate

Sodium 7440-23-5

Sodium amobarbital

U Amobarbital sodium

Sodium amytal

U Amobarbital sodium

Sodium azile 26628-22-8

Sodium bicarbonate 144-55-8

UF Carbonic acid, monosodium salt

Sodium chloride 7647-14-5

UF Saline

Sodium 5-ethyl-5-(1-Methylbutyl) barbiturate

U Pentobarbital sodium

Sodium fluoride 7681-49-4

Sodium hexobarbital

U Hexobarbital sodium

Sodium hexobarbitone

U Hexobarbital sodium

Sodium hydroxide 1310-73-2

Sodium hyposulfite

U Sodium thiosulfate

Sodium nitrate 7631-99-4

UF Niter

UF Nitric acid, sodium salt

UF Soda niter

Sodium pentobarbital

U Pentobarbital sodium

Sodium pentobarbitone

U Pentobarbital sodium

Sodium pentothal

Sodium pentothal (cont'd)

U Thiopental sodium

Sodium pentothiobarbital

U Thiopental sodium

Sodium phosphate (dibasic) 7558-79-4

Sodium phosphate (monobasic) 7558-80-7

Sodium thiopental

U Thiopental sodium

Sodium thiopentone

U Thiopental sodium

Sodium thiosulfate 7772-98-7

UF Disodium thiosulfate

UF Hypo

UF Sodium hyposulfite

UF Thiosulfuric acid, disodium salt

Solvents

Soman 96-64-0

BT Organophosphorus compounds

UF 1,1,2-Trimethylpropoxyfluorophosphine oxide

UF 1,2,2-Trimethylpropyl-methylphosphonofluoridate

UF 3,3-Dimethyl-2-butyl-methyl-phosphonofluoridate

UF Fluoromethyl(1,2,2-trimethylpropoxy) phosphine oxide

UF Methyl pinacolyl phosphonofluoridate

UF Methyl pinacolylphosphoryl fluoride

UF Methylphosphonofluoridic acid 1,2,2-trimethyl propyl ester

UF Methylphosphonofluoridic acid 1,2,2-trimethylpropyl ester

UF Phosphonofluoridic acid, methyl-, 1,2,2-trimethylpropyl ester

UF Pinacoloxymethylphosphoryl fluoride

UF Pinacolyl methylfluorophosphonate

UF Pinacolyl methylphosphonofluoridate

UF PMFP

UF Zoman

<sup>32</sup>P-Soman

Soman poisoning

Sonication

Spasticity, muscle

U Muscle spasticity

Spectra

NT Ultraviolet and Visible spectra

Spectrometry

UF Spectrophotometry

Spectrophotometry

U Spectrometry

Spheroidine

U Tetrodotoxin

Sphingomyelins



- Spinal cord
- Spinal nerve roots
  - NT Ganglia, spinal
- Spinal nerves
- Spine
- Spleen
- Squid
- Stereoisomerism and Stereoisomers
  - U Isomerism and Isomers
- Stimulation, chemical
- Stimulation, electric
  - U Electric stimulation
- Stimulation, physical
  - U Physical stimulation
- Stoichiometry
- Stomach
  - BT Gastrointestinal system
- Stratum corneum
- Substrate
- Succinate dehydrogenase
  - UF Succinic oxidase
- Succinic oxidase
  - U Succinate dehydrogenase
- Sulfides
  - U Thioethers
- Sulfonium, [2-[(ethoxymethylphosphinyl) thio] ethyl]ethylmethyl-, methyl sulfate
  - U GD-42
- Sulfonyl compounds
- Sulfur 7704-34-9
- Sweat glands
  - NT Apocrine glands
  - NT Eccrine glands
- Sympathetic blocking agents
  - U Sympatholytics
- Sympathetic ganglia
  - U Ganglia, sympathetic
- Sympathetic nervous system
- Sympatholytics
  - UF Sympathetic blocking agents
- Synapses
  - BT Neurons
- Synaptic activity
- Synaptic receptors
- Synaptic vesicles
- Synergism
- Sytam
  - U Octamethyl pyrophosphoramide

Tabun 77-81-6  
   UF Dimethylamidoethoxyphosphoryl cyanide  
   UF Dimethylphosphoramidocyanidic acid, ethyl ester  
   UF Ethyl dimethylamidocyanophosphate  
   UF Ethyl dimethylphosphoramidocyanidate  
   UF Ethyl N,N-dimethyl phosphoramido cyanidate  
   UF N-Dimethylphosphoramidocyanidate  
   UF Phosphoramidocyanidic acid, dimethyl-, ethyl ester  
 Tabunase 9032-18-2  
   UF Diisopropylphosphorofluoridase  
 Tachycardia  
 Tachyphylaxis  
 Tachypnea  
 Tacrine 321-64-2  
   UF 1,2,3,4-tetrahydro-5-aminoacridine  
   UF 1,2,3,4-Tetrahydro-9-acridinamine  
   UF 9-Acridinamine, 1,2,3,4-tetrahydro-  
   UF 9-Amino-1,2,3,4-tetrahydroacridine  
 Tail  
 Tail response  
 Tarichatoxin  
   U Tetrodotoxin  
 TCA  
   U Trichloroacetic acid  
 TDT 3570-55-6  
   UF 2,2'-thiodiethanethiol  
   UF 2-Mercaptoethyl sulfide  
 Temperature  
   RT Body temperature  
   RT Thermometers  
 Tendons  
 Tensilon 116-38-1  
   UF Benzenaminium, N-ethyl-3-hydroxy-N,N-dimethyl-, chloride  
 Tensilon bromide  
   U Edrophonium bromide  
 Tensilon chloride  
   U Edrophonium chloride  
 TEP  
   U Tetraethyl pyrophosphate  
 TEPP  
   U Tetraethyl pyrophosphate  
 Teratogenic agents  
   RT Mutagens  
 Tetanic activity  
 Tetanic blockade  
 Tetanic contraction  
 Tetanic response  
 Tetanic stimulation  
 Tetanus  
 Tetraethyldiphosphate  
   U Tetraethyl pyrophosphate  
 Tetraethyl pyrophosphate 107-49-3  
   UF Diphosphoric acid tetraethyl ester

## Tetraethyl pyrophosphate (cont'd)

UF Pyrophosphoric acid tetraethyl ester

UF TEP

UF TEPP

UF Tetraethyldiphosphate

UF Tetrastigmine

UF Tetron-100

## 1,2,3,4-Tetrahydro-9-acridinamine

U Tacrine

## 1,2,3,4-tetrahydro-5-aminoacridine

U Tacrine

## Tetraisopropyl pyrophosphoramidate

U DPDA

## Tetram

U Amiton

## N,2,3,3-Tetramethylbichlo [2.2.1] heptan-2-amine

U Mecamylamine

## Tetrastigmine

U Tetraethyl pyrophosphate

## Tetrodotoxin

U Tetrodotoxin

## Tetrodotoxin 4368-28-9

UF Speroidine

UF Tarichatoxin

UF Tetrodotoxin

UF TTX

## Tetron-100

U Tetraethyl pyrophosphate

## THA

U Thalactamine

## Thalactamin

U Thalactamine

## Thalactamine 23434-97-1

UF THA

UF Thalactamin

## Thalamus

## Tham

U Tris buffer

## Theramine

U Histamine

## Therapeutic processes

## Therapy

## Thermography

RT Body temperature

Thermometers  
  RT Body temperature  
  RT Temperature  
Thermoreceptors  
  BT Nerve endings  
Thermoregulation  
  U Body temperature regulation  
Thigh  
Thimet  
  U Phorate  
Thin-layer chromatography  
  U Chromatography, thin-layer  
Thiocholine 625-00-3  
  BT Choline  
  UF Ethanaminium, 2-mercapto-N, N, N-trimethyl-  
2,2'-thiodiethanethiol  
  U TDT  
Thioethers  
  U Sulfides  
Thiometon  
  BT Insecticides, organothiophosphate  
Thiopental sodium 71-73-8 7438-31-5  
  UF Sodium pentothal  
  UF Sodium pentothiobarbital  
  UF Sodium thiopental  
  UF Sodium thiopentone  
  UF Thiopentone sodium  
Thiopentone sodium  
  U Thiopental sodium  
Thiophos  
  U Parathion  
Thiosulfuric acid, disodium salt  
  U Sodium thiosulfate  
Thiourea 62-56-6  
Thorax  
Thorazine  
  U Chlorpromazine  
Thymidine 50-89-5  
  UF 1-(2-Deoxy-beta-D-ribofuranosyl)-5-methyluracil  
  UF Thymine-2-desoxyriboside  
Thymidine, esters  
Thymine-2-desoxyriboside  
  U Thymidine  
Thyroid gland  
  BT Endocrine glands  
Tibia  
Tibial muscle  
  BT Muscles  
Tibial nerve  
  BT Nerves  
Tissue  
TMB-4 56-97-3  
  BT Oximes

TMB-4 56-97-3 (cont'd)  
UF Trimedoxime bromide  
UF 1,1'-Trimethylene-bis(4-formylpyridinium bromide)  
TOCP  
U Tri-o-tolyl phosphate  
Toluene 108-88-3  
UF Benzene, methyl-  
TOTP  
U Tri-o-tolyl phosphate  
Toxicity  
Toxicology  
RT Poisoning  
RT Poisons  
Toxins  
Toxogonin 114-90-0  
BT Oximes  
UF bis(4-hydroxyiminomethyl-pyridinium-1-methyl)-ether dichloride  
UF LuH-6  
UF Obidoxime chloride  
UF Obidoxime hydrochloride  
UF Toxogonin dichloride  
UF Toxogonine  
Toxogonin dichloride  
U Toxogonin  
Toxogonine  
U Toxogonin  
Toxoids  
Trachea  
Tracheal cannula  
Tranquilizers  
U Tranquilizing agents  
Tranquilizing agents  
RT Hypnotics and Sedatives  
UF Tranquilizers  
Tranquilizing agents, major  
UF Neuroleptics  
Tranquilizing agents, minor  
Transfusion  
U Blood transfusion  
Trasentine 64-95-9  
Trasentine hydrochloride 50-42-0  
UF Adiphenine hydrochloride  
UF 2-Diethylaminoethyl diphenyl acetate hydrochloride  
UF Difacil hydrochloride  
Trazentine 71-96-5  
Tremor  
Trichlorfon 52-68-6  
UF Dipterex  
Trichloroacetic acid 76-03-0  
UF TCA

Tri-o-cresyl phosphate  
     U Tri-o-tolyl phosphate  
 Triethylcholine  
     BT Choline  
 Triflupromazine 146-54-3  
 Trimedoxime bromide  
     U TMB-4  
 1,1'-Trimethylene-bis(4-formylpyridinium bromide)  
     U TMB-4  
 1,1'-Trimethylene-bis(4-formylpyridinium) dioxime dibromide 56-97-2  
 Trimethylolaminomethane  
     U Tris buffer  
 1,1,2-Trimethylpropoxyfluorophosphine oxide  
     U Soman  
 1,2,2-Trimethylpropyl-methylphosphonofluoridate  
     U Soman  
 Tris buffer 77-86-1  
     UF 1,3-Propanediol, 2-amino-2-(hydroxymethyl)-  
     UF THAM  
     UF Trimethylolaminomethane  
     UF Tris(hydroxymethyl) methanamine  
 Tritium 10028-17-8  
     BT Hydrogen, isotopes of  
     UF <sup>3</sup>H  
     UF Hydrogen-3  
 Tri-o-tolyl phosphate 78-30-8  
     UF TOCP  
     UF TOTP  
     UF Tri-o-cresyl phosphate  
     UF Tris (o-methylphenyl) phosphate  
 Tritons  
 Triton X-100 39409-11-5 66057-68-9 66057-69-0 9002-93-1 9010-42-8  
     9010-43-9 9077-65-0  
     UF Polyethyleneglycol octylphenol ether  
 Tropaic acid  
     U Tropic acid  
 Tropic acid 529-64-6  
     UF alpha-(Hydroxymethyl) benzeneacetic acid  
     UF Tropaic acid  
 Trypan blue 72-57-1  
 Trypsin  
     UF Tryptar  
 Tryptar  
     U Trypsin  
 TTX  
     U Tetrodotoxin  
 Tubadil  
     U d-Tubocurarine chloride

Tubarine  
     U d-Tubocurarine chloride  
 d-Tubocurarine 57-95-4  
 d-Tubocurarine chloride 57-94-3  
     UF Delacurarine  
     UF Tubadil  
     UF Tubarine  
 Twitch  
 Twitch response  
 Twitch stimuli  
 U-23223  
     U Benzoic acid, 3-chloro-2,5,6-trimethyl-  
 UDP  
     U Uridine 5'-(trihydrogen diphosphate)  
 Ultraviolet and Visible spectra  
     BT Spectra  
     UF Ultraviolet spectra  
 Ultraviolet rays  
 Ultraviolet spectra  
     U Ultraviolet and Visible spectra  
 Urea 57-13-6  
     UF Carbamide  
     UF Carbonyldiamide  
     UF Ureaphil  
 Ureaphil  
     U Urea  
 Urethan  
     U Carbamic acid, esters, ethyl ester  
 Urethane  
     U Carbamic acid, esters, ethyl ester  
 Urethanes  
     For specific urethanes, see specific terms  
 Uridine 5'-pyrophosphate  
     U Uridine 5'-(trihydrogen diphosphate)  
 Uridine 5-pyrophosphoric acid  
     U Uridine 5'-(trihydrogen diphosphate)  
 Uridine 5'-(tetrahydrogen triphosphate)  
     U Uridine 5'-triphosphate  
 Uridine 5'-(trihydrogen diphosphate) 58-98-0  
     UF UDP  
     UF Uridine 5'-pyrophosphate  
     UF Uridine 5-pyrophosphoric acid  
 Uridine 5'-triphosphate 63-39-8  
     UF Uridine 5'-(tetrahydrogen triphosphate)  
     UF UTP  
 Urinary tract  
     NT Bladder  
     NT Kidney

Urogenital system  
 UTP  
     U Uridine 5'-triphosphate  
 Vagus nerve  
     BT Nerves  
 Valium  
     U Diazepam  
 Vascular resistance  
 Vasoconstriction  
 Vasoconstriction agents  
     UF Vasopressor agents  
 Vasodilation  
 Vasodilator agents  
 Vasomotor system  
 Vasopressor agents  
     U Vasoconstriction agents  
 Vein  
 Veins  
     BT Blood vessels  
 Venous pressure  
     RT Pressure  
     UF Blood pressure, venous  
 Ventilation  
     Term is used for environment, not lungs.  
 Ventilation, artificial  
     U Respiration, artificial  
 Ventilation, mechanical  
     U Respiration, artificial  
 Ventilators, pulmonary  
     U Respirators  
 Veratrine  
     U Cevadine  
 Veronal  
     U Barbitol  
 Vertebrates  
     NT Mammals  
 Vidine  
     U Choline  
 Vinblastine 865-21-4  
     UF Vincal leukoblastine  
     UF VLB  
 Vinblastine sulfate 145-67-9  
     UF Vincal leukoblastine, sulfate  
 Vincal leukoblastine  
     U Vinblastine  
 Vincal leukoblastine, sulfate  
     U Vinblastine sulfate

Versamine  
     U Mecamylamine



VLB

U Vinblastine

VX 51848-47-6

UF Ethyl-S-(2-diisopropylaminoethyl) methylthiophosphonate

VX-3

Warburg technique

Weight gain

RT Body weight

Weight loss

RT Body weight

White blood cells

U Leukocytes

Xylocaine

U Lidocaine

Yttrium

Zoman

U Soman

Zytron

U DMPA (herbicide)